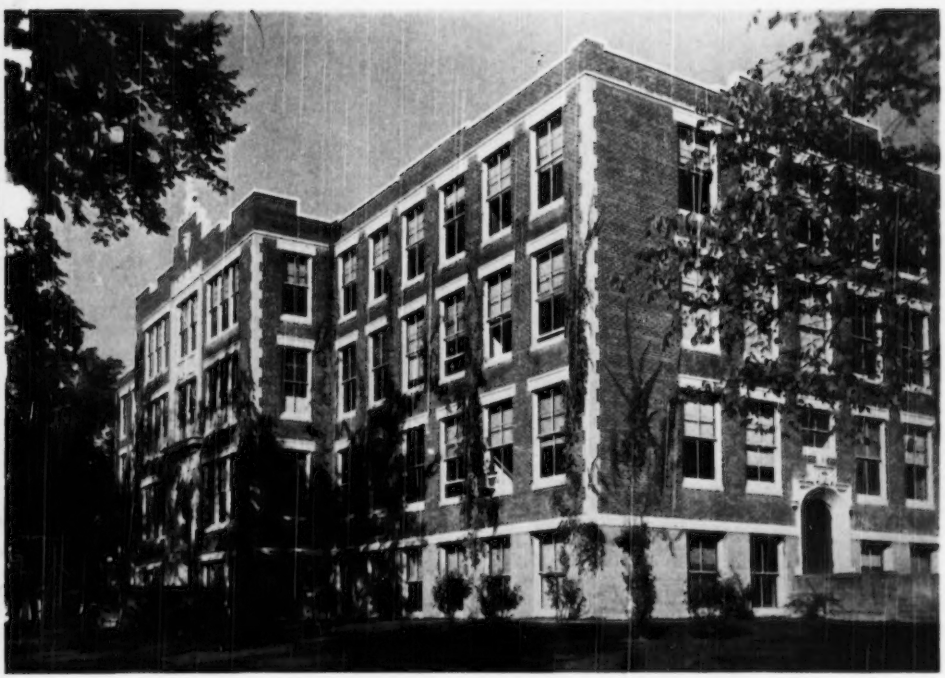
SEPT. 28, 1950

WHAT FACTORS ARE INVOLVED IN PULP CURLING?

IS YOUR PROBLEM UNIFORMITY?

HOW DOES A UNIVERSITY CONTRIBUTE TO OUR INDUSTRY?

Paper TRADE JOURNAL



AUBERT HALL
University of Maine

Where pulp and paper courses are given.

THE UNIVERSITY OF MAINE NUMBER

of

Paper Trade Journal

NOVEMBER 30, 1950

Will contain the entire lecture course (1950) of Pulp and Paper Technology as given at this pioneer school of education for training men for the Pulp and Paper Industries.

More than 200 pages of text and illustrations

FROM THE WET END TO THE DRY

the "little" problems are solved by

DOWNINGTOWN AUXILIARIES

PUMPS for all purposes, including chest circulation

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Our large staff of research and development engineers is constantly working to solve the individual production problems of the paper industry. Testing their ideas in the pilot plant at Downingtown under actual mill conditions, these men are answering the "little" questions that often mean over-all profit or loss.

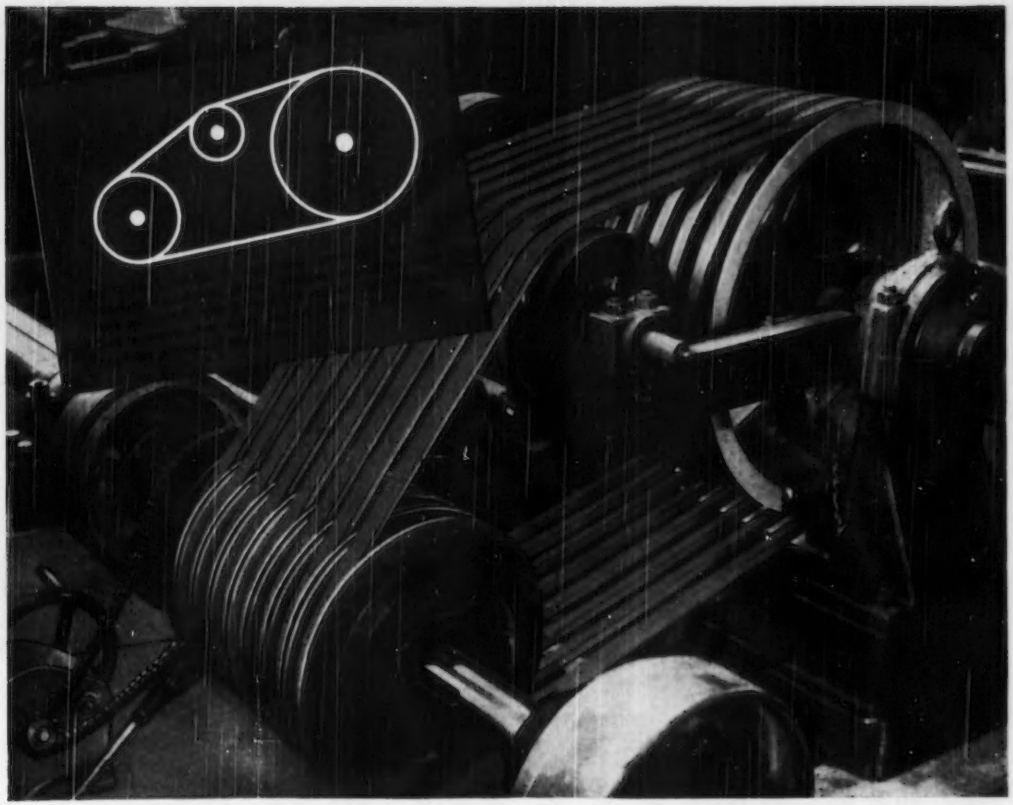
Send us your own problems—great or small.

DOWNINGTOWN MANUFACTURING COMPANY

DOWNINGTOWN, PA.

Pacific Coast Representative JOHN V. ROSLUND, Pacific Bldg., Portland 4, Ore.

DESIGNERS AND BUILDERS OF PAPER MAKING MACHINERY SINCE 1890



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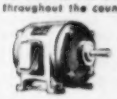

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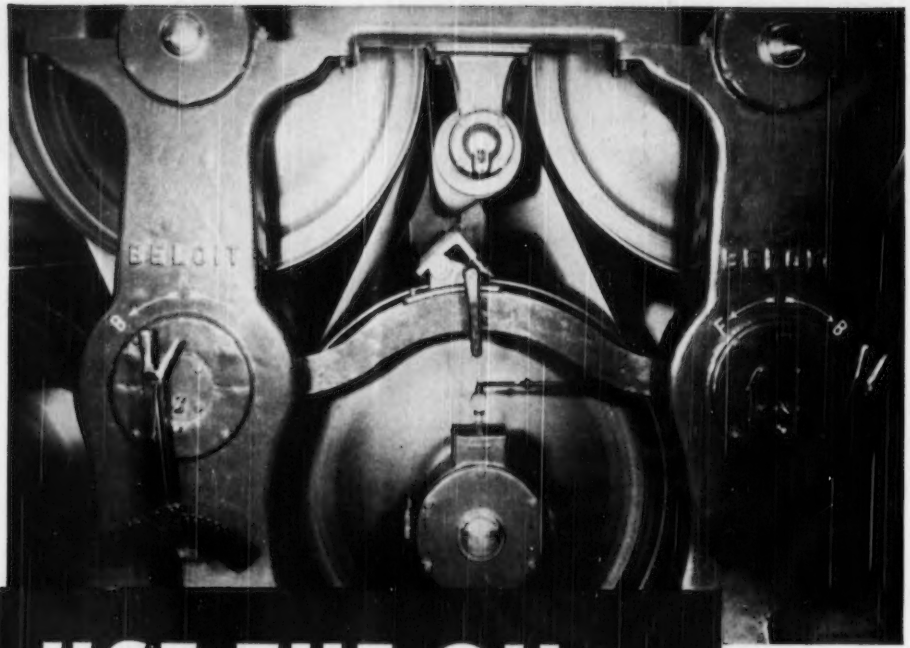

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TEXACO URSA OIL X** does this double job

When you charge the lubricating system of your paper machines with *Texaco Ursa Oil X***, as recommended by your Texaco Lubrication Engineer, you're assuring (1) lubrication that will stand up under the highest operating temperatures and severest conditions; and (2) cleanliness of oil lines and bearings.

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Your enclosed gears can best be protected by *Texaco Meropa Lubricants.* They stand up under heavy loads . . . resist oxidation and thickening . . . do not foam. You'll find they reduce both wear and maintenance costs.

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FOR THE PAPER INDUSTRY

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TRADE JOURNAL

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VOL. 131 SEPTEMBER 28, 1950 NO. 13

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DATES TO REMEMBER

OCTOBER 2-4: American Management Assn. National Conference on Personnel Problems of Industrial Mobilization, Hotel Statler, N. Y.

OCTOBER 2-5: Fifth Engineering Conference of the Pulp and Paper Industry, Netherland Plaza Hotel, Cincinnati, Ohio.

OCTOBER 11-13: Fifth Annual Symposium on "Instrumentation for the Process Industries," Agricultural and Mechanical College of Texas, College Station, Texas.

OCTOBER 12-14: American Pulp & Paper Mills Supts. (Southern and Southeastern Div.) Annual Meeting, George Vanderbilt Hotel, Asheville, N. C.

OCTOBER 16-20: 38th Safety Congress and Exposition, Chicago, Ill.

OCTOBER 23-25: National Paper Trade Assn., Fall Convention, Stevens Hotel, Chicago, Ill.

OCTOBER 25-27: Alkaline Pulping Conference, George Washington Hotel, Jacksonville, Fla.

OCTOBER 30-31 NOVEMBER 1: 37th National Foreign Trade Convention, The Waldorf-Astoria, New York, N. Y.

NOVEMBER 2: Instrument Society of America, Hotel Bellevue-Stratford, Philadelphia, Pa.

NOVEMBER 27—DECEMBER 2: 19th National Exposition of Power and Mechanical Engineering, Grand Central Palace, New York, N. Y.

DECEMBER 3-6: American Institute of Chemical Engineers, Annual Meeting, Neal House, Columbus, Ohio.

JANUARY 15-18, 1951: Plant Maintenance Show & Conference, Public Auditorium, Cleveland, Ohio.

THIS WEEK

Basic method of pulp curling and the factors involved are discussed in "Mechanics of Curlation," by James Coghill.

Is your problem uniformity? Read Arthur Haug on Scotts Quality Control System.

The University of Florida keeps pace with its Pulp and Paper Industry.

Depreciation Trouble? Chandler has a few timely hints.

NEXT WEEK

Quality Control in Board Mill by L. B. Chamberlain

International Paper's New Natchez Mill

They All Have a Stake In Our Forests by James S. McClellan

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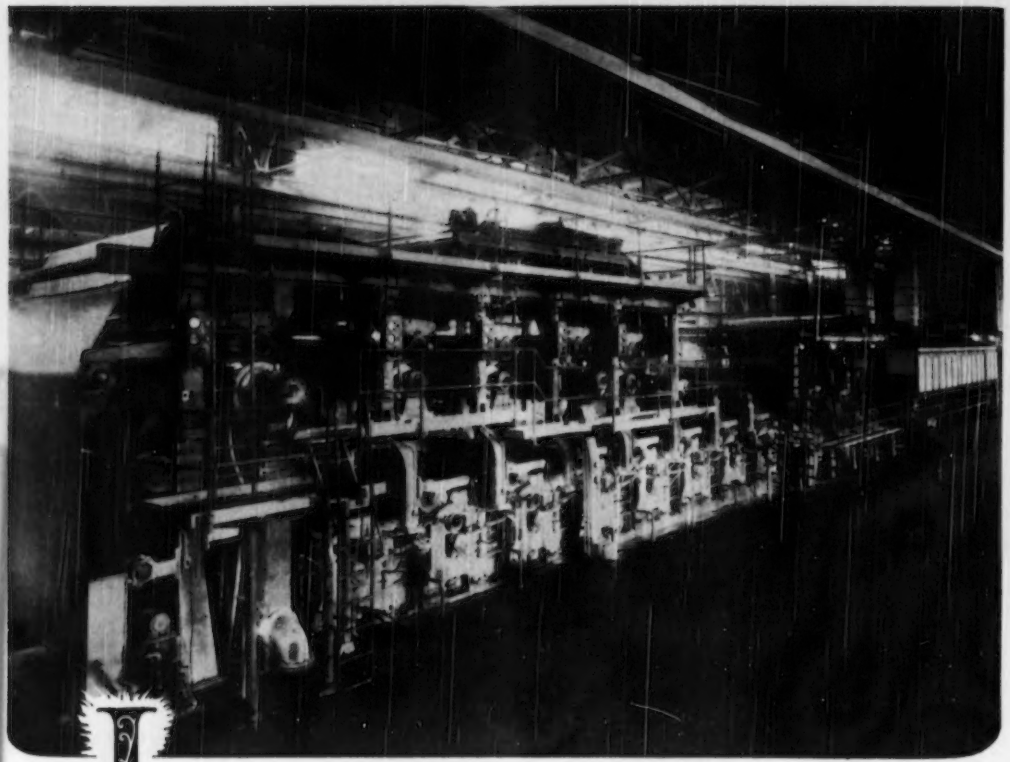

In the Black-Clawson tradition

Down the decades the most modern and most successful board machines have been those bearing the Black-Clawson name-plate. The 8-cylinder machine here shown carries on that enviable Black-Clawson tradition.

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- Fourdriniers
- HYDRONAMIC Inlets
- Machine Drives
- Calenders
- Reels
- Layboys
- Cutters, etc.

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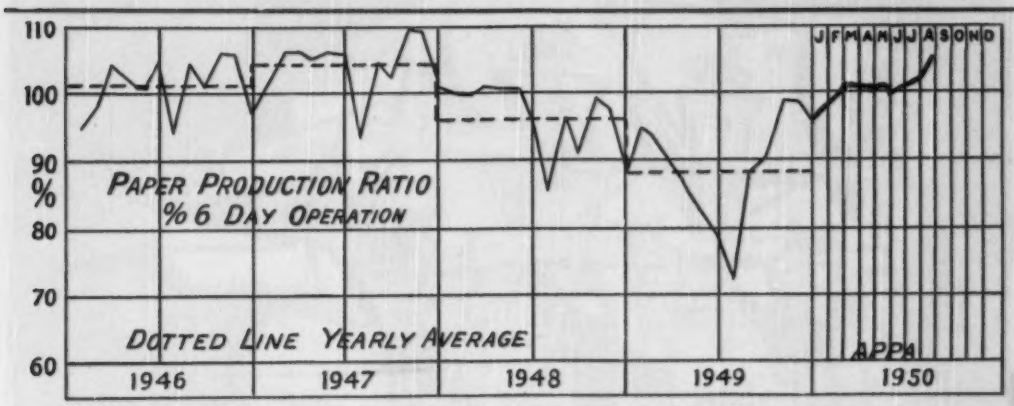
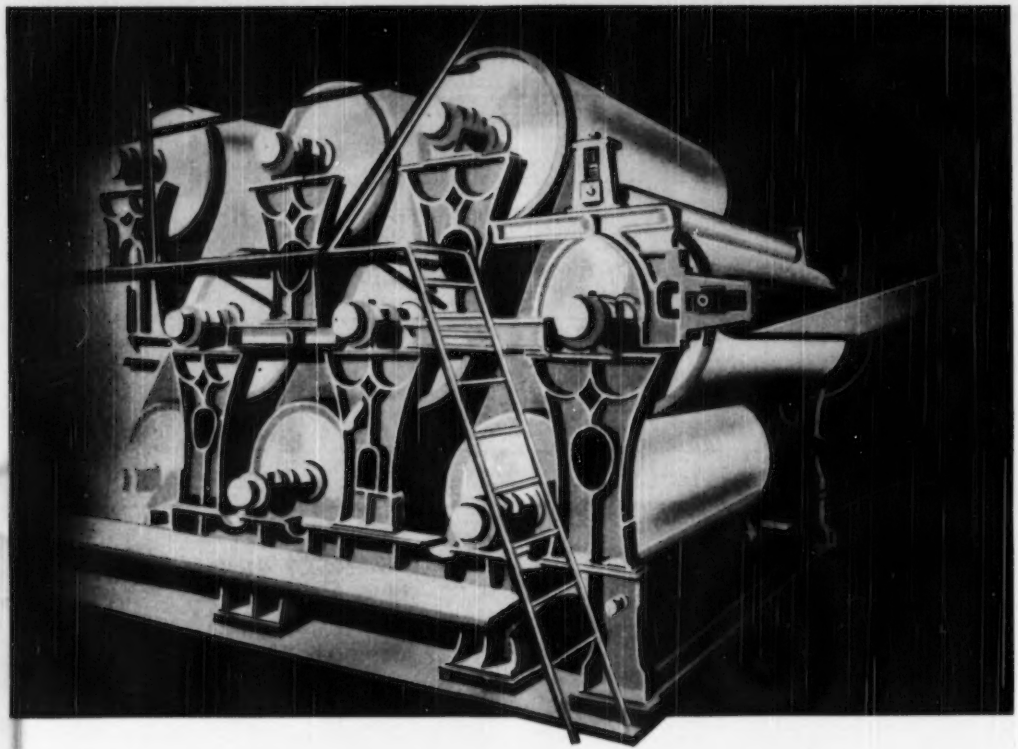
OUR BUSINESS



Source	Production	WEEK ENDING Sept. 16, '50	Aug. 19, '50	Sept. 17, '49
APPA	Paper Production percent 6-day Capacity	110.5	105.6	94.0
	Unbl. Kraft Paper Production percent	91.7	99.0	80.3
NPA	Paperboard Operating Ratio percent inch hours	100.0	101.0	92.0
		July 1950	**June 1950**	**July 1949**
APPA	Paper Production* (Except Newsprint and Building Papers) ....Tons	748,000	788,500	555,000
	New Orders ....Tons	957,000	812,800	589,000
	Unfilled Orders ....Tons	775,000	565,565	368,365
	Shipments ....Tons	745,000	786,300	566,000
		August 1950‡	**July 1950**	**August 1949**
NPA	Paperboard Production ....Tons	1,130,242	745,255	821,600
	New Orders ....Tons	1,365,968	890,890	890,200
	Unfilled Orders ....Tons	729,058	524,391	365,600
	Our Customers Activities Index[1]	**Latest Mo.°**	**Previous Mo.°**	**Year Ago°**
FRS	Manufactures Total Index	209	203	176
	Durable Mfg. Index	238	232	195
	Nondurable Mfg. Index	184	180	161
	Chemical Products Index	259	255	230
	Mfg. Food Products Index	164	157	165
	Printing and Publishing Index	169	169	148
ODC	Magazine Advg.-Printer's Ink Index	321	324	314
	Retail Sales Combined Adjusted Index	316.2	313.0	300.9
	Drug Index	215.4	215.9	225.3
	General Merchandise Group Index	306.6	300.5	293.1
	Grocery and Combination Index	379.2	379.1	358.1
	Prices Index			
BLS	Consumers Price Index[1]	170.2	168.6	169.6
	Wholesale all Commodities[2]	157.3	155.9	154.5
	Wholesale Foods[2]	162.1	159.9	162.4
	Commodities other than Farm Products and Foods[2]	148.8	147.6	145.5
	Wholesale Pulp and Paper[2]	155.4	155.4	159.6
	Purchasing Power of Dollar, Consumers Prices[1]	58.8	59.3	59.0
	General Activity Index			
FRS	Mfg. Production-Worker Payroll	349.0	337.2	312.8
	Unemployment Compensation Initial Claims (M)	1,104	1,367	1,522
	Miscellaneous Carloadings–Thousands of Cars	1,846	1,424	1,637
	Electric Output (Million KW hr.)	31,608	31,486	28,025
PTJ	Average 32 P & P Common Stocks as of Sept. 19	$33.61	$32.61	$27.05
	Average Indicated Dividends Common Stocks as of Sept. 19	$ 2.41	$ 2.32	$ 2.21

[1] 1935- 39=100 Unadjusted Index
[2] 1926=100
* For details see APPA Monthly Statistical Summary—June 1950 Estimated Figures
° Latest Month Available on Request
‡ For Five Weeks



Equipment Investment Pays Off in 64% Increase

Here is a case history that should start you thinking about your plant equipment. A well-known boxboard company needed increased drier capacity, but floor space was limited.

The solution lay in the addition of six Lukenweld Jacketed Steel Drier Rolls at the dry end, plus the addition of five reconditioned conventional driers at the wet end, with improved drainage and vapor absorption systems. They attained a drying rate of 1.5 lbs. of board per square foot of drier surface per hour. Much higher than previous average for this type of board, this improved drying rate permitted increased speeds, resulting in a whopping 64% tonnage gain. Small wonder the plant manager terms a Lukenweld Drier "a drier and a half." Under *identical* pressures they are *better* heat transfer units than driers of other designs. They deliver more even heat, are mechanically safe—since steel plate will never fail by shattering—can be operated safely at pressures up to 350 psi or higher.

Besides improved drying, Lukenweld Jacketed Steel Drier Rolls offer the advantages of reduced installation and maintenance costs, more flexible operation. Of all the drier rolls produced by Lukenweld not one has had to be taken out of service—and over 35% of our customers have ordered additional drier rolls. This is evidence of Lukenweld's specialized manufacturing and engineering ability. Such know-how—plus Lukens' 140 years experience in producing specialty steels is back of every Lukenweld job.

For information on drying and other processing machinery for the pulp and paper industry, write Lukenweld, Division of Lukens Steel Company, 403 Lukens Building, Coatesville, Pennsylvania.

Improved machinery for improved processes through engineering

LUKENWELD

A DIVISION OF LUKENS STEEL COMPANY

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Paper TRADE JOURNAL

TRENDS

Office of the PAPER TRADE JOURNAL,
Wednesday, September 27, 1950.

Fourth-Quarter Pulp Prices Jell

With the exception of U. S. semi-bleached sulfites and Finnish pulps, fourth-quarter prices have jelled at levels reported on *Prices* page.

Though hopeful of the outcome of negotiations with repair shop workers, a strike which now has closed three mills completely and curtailed operation at others, Finnish representatives are unable to quote prices because of the uncertainty.

Summarizing the rises: *bleached sulfites*, U. S. $6, Canadian $10, Swedish $35; *bleached krafts*, U. S. $6/$25, Canadian $10, Swedish $35; *unbleached sulfites*, Canadian $10, Swedish $31; *unbleached krafts*, U. S. $15, Canadian $15, Swedish $28.

At current capacity operations, some mills will find their reservations inadequate and will have to buy on spot market. Rumored are prices well over the $200 mark for bleached grades.

Rag Content Prices Rise

The expected rise in *rag content* prices was initiated last week when a major producer announced rises averaging 10 percent. Lowest rise is in the 25 percent grades which is close to 7 percent over the earlier level. At current prices of cottons and spot pulps, more mills may be compelled to follow suit.

Canada Dollar Parity

Though denied by official Ottawa circles last week, revaluation of the Canadian dollar to full parity with the U. S. dollar is only a matter of political timing, Canadian financial and business circles believe. Notwithstanding the fact that such revaluation is likely to have an effect on newsprint and lumber, now benefiting from the premium on U. S. funds with which they are paid for a major portion of their business, big business is expecting it, in the opinion of delegates to the Canadian Chamber of Commerce meeting held at Banff last week.

Official statement traces the continued prosperity of Canada to "the high level of industrial activity in the U. S. and the support which has been afforded by ECA funds which the UK and Europe have spent in Canada. During the past year, Canadian trade and business have moved perceptibly closer to our neighbor to the south. This is a move which is likely to continue under the necessity of joint defense and industrial preparedness," it was stated.

COARSE PAPER PRODUCTION, JULY, 1950

(Tons of 2,000 pounds)

	July 1950	% of Total	June 1950	% of Total	July 1949
Coarse paper, total	257,841		296,290		188,020
Glassine, greaseprf. & veg. parchmt.	10,747	4.1	12,623	4.2	8,968
Wrapping, total	65,627	25.5	78,133	26.3	53,156
Unbleached kraft	38,188	14.8	44,453	18.7	29,432
Other	27,439	10.6	33,680	11.5	23,724
Bag, total	57,623	22.3	63,536	21.4	43,835
Unbleached kraft	53,048	20.6	56,997	19.2	40,808
Other	4,575	1.7	6,539	2.2	3,027
Shipping sack	51,271	19.8	60,335	20.3	35,709
Converting, total	72,573	28.1	81,663	27.5	46,352
Unbleached kraft	40,556	15.7	44,204	14.9	22,474
Other	32,017	12.5	37,459	12.6	23,878

Based on Bureau of Census figures.

Wrapping Paper Shortages

The suddenness of the market's upheaval has hit the dealer in wrapping papers hard. Added to the ever-present problems of survival at today's 22 percent operating costs is that of stock shortages.

What has happened to the supply of wrapping tissues? the dealers ask of the mills. Has No. 2 disappeared from the market? When are we going to know how much kraft wrapping we can plan on to fill regular requirements? Cutbacks during the last war were gradual, and we and our customers adjusted in an orderly way. There is nothing but confusion in today's condition. Cuts have amounted to 75 percent, at a time when the trade is packing Christmas merchandise and should be stockpiling for holiday business. If we knew what to expect, we could plan to stay in business. As it is, we haven't stock to sell. "We ask clarification of the mill position so we can plan distribution to our regular trade," a dealer spokesman said. "An extension of Customer Relations Committees is wanted and needed to iron out problems of supply, delivery, etc."

Customer Relations Committees

Defined as a highly constructive activity of individual mills, these committees are said to be composed of their customers and mill representatives. Discussions center around distribution and marketing problems. More of this sort of cooperation is desired.

(ED. NOTE: There are many of these famous mill-customer groups, among which are Strathmore, Hammermill, etc.)

Wrapping Tissues.— Mill men believe the core of the wrapping tissue shortage is in the suddenness with which the market turned. From the weakness of the winter when mills were seeking new accounts or finding more profitable operation, when the market was heavy with stocks of No. 1, 1½ and 2's, a rising market was created by June pulp price lifts and higher tissue prices. Dealers rushed to cover. Often the new accounts outstepped the older ones. Then came Korea and panic buying, and the consumers also rushed to buy. Everyone wanted more and there was none, and the mills were swamped with orders. Price lists were withdrawn, all orders refused until the situation could be clarified.

Conditions are gradually righting themselves, it is stated, particularly for Nos. 1 and 1½.

From present information, it does not appear that sufficient quantities of No. 2 are likely to be on the market for some time to come. Producers left the market for more profitable operation, particularly in toilet tissues, and are not expected to revert, under existing conditions.

Currently there are no published price lists for wrapping tissues. No. 1 is thought to be priced about $1.60 to $1.65, but runs at least to $1.90. No. 2, though about $1.40/$1.45, also is being sold at $1.90. The spot market is at premium prices, to say the least.

Kraft Wrapping Paper.— Dealer gripes over kraft wrapping shortages hold that much less tonnage is reaching the market, that more is going into bag and liner operations. To a degree, this is held to be true of current activity, though July figures shown in *Table I* show little change from June. Government requirements of multiwall bag paper are known to be heavy. Demands for liner stock have grown by leaps and bounds. Converting operations also are drawing off tonnages.

However, much that has been said of the tissue supply also applies to kraft wrapping tonnages. With this exception, however, that the market is readying faster on wrapping than on tissues. Dealers say they are getting a percentage of their orders, though definitely far below their customer needs. If they knew what to plan on, as in the wartime allocations, they could go to work.

A gray market flourishes in wrapping tissues and kraft wrappings, corrugateds and gummed tapes, partly as a result of conditions which dealers believe could be easily corrected.

— E. P. N.

Paperboard Production (Tons)*

	Sept. 16 1950	Sept. 9 1950	Sept. 17 1949
Production	231,325	180,467	203,128
New Orders	207,785	191,916	197,991
Unfilled Orders	714,466	738,187	369,573

Source: NPA.

STOP MOLD

on soap wrappers with SANTOBRITE

It is easy to control organisms that cause soap wrappers to mold. Low concentrations of Monsanto Santobrite (sodium pentachlorophenate, technical) prevent mold damage in casein-coated paper. It is recommended that the Santobrite be added during paper manufacture.

As little as 2.0% of Santobrite, based on the dry weight of casein in the size, gives complete protection against surface microbiological growth. And, since the organisms also flourish in adhesives used on soap wrappers, Santobrite should be incorporated into them.

If you have a customer whose sales are slowing down because his soap wrappers are molding, go to his aid with Monsanto Santobrite. For information, mail the coupon or contact the nearest Monsanto Sales Office. MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, 1764-J South Second Street, St. Louis 4, Missouri.

Santobrite: Reg. U. S. Pat. Off.

Don't confuse Monsanto Santobrite with lower chlorinated phenols. Santobrite is the sodium salt of pentachlorophenol. It is essentially nonodorous and nonvolatile. Monsanto specifications maintain a high standard of purity which rules out contamination of Santobrite by any appreciable quantities of lower chlorinated phenols usually associated with undesirable odors.

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1764-J South Second Street, St. Louis 4, Missouri

Please send further information on the use of Santobrite to stop mold in soap wrappers.

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SERVING INDUSTRY . . . WHICH SERVES MANKIND

News of the Week

Paper TRADE JOURNAL

FRANKLIN RESUMES OPERATIONS

HOLYOKE, Mass.—The Franklin Paper Co., 84-year-old industry which ceased operations July 1 without apparent prospect of resumption, will be manufacturing paperboard within approximately two weeks.

Some of the 60 employes left without jobs when the mill closed will be called back, it was stated by Robert M. Swaney, president, treasurer and general manager.

The Franklin will no longer manufacture the fine grades of paperboards and printing bristols for which it was noted in the past. The new operation will consist of the manufacture of paperboards in the coarse bulk grades. Fewer employes will be needed than on the fine paper operation.

At the time the mill closed it was assumed that it would either be sold as a going concern or liquidated. However, within a few days, after the decision to close, the seriousness of the invasion of South Korea became apparent, and the quick surge of demand for all varieties of paper products raised hopes here that the Franklin mill could be put to use.

Details of the new manufacturing program have not yet been worked out. For the present the mill will operate under the name of Franklin Paper Co. At the moment it is under the same board of directors and management as when it closed, however, it is understood that out-of-town interests are involved in the new operation.

TO REOPEN THREE RIVERS MILL

THREE RIVERS, Mich. — The Eddy Paper Corp., and John W. Kieckhefer, president of Eddy and Kieckhefer Container Corp., re-purchased mill No. 3 of the Eddy Paper Corp., which was sold to the International Paper Co. in 1948 and shut down.

George C. Radke is general manager of Eddy, a Three Rivers firm. He stated the property was purchased to increase production.

To be reactivated, the plant will add 60 to 100 men to the payroll, install modern machinery, and produce about 3,000 tons of liner board monthly.

Mr. Kieckhefer, the partner in the concern, is from Milwaukee, Wis.

SASKATCHEWAN ROOFING PLANT

VANCOUVER, B. C. — Sidney Roofing & Paper Co., Ltd., Victoria, B. C., and Vancouver, B. C., have awarded contract valued at $400,000 for an asphalt roofing material plant at Lloydminster, Sask. Contract has been placed with the Minor Construction Co., Ltd., North Battleford, Sask., and Rule, Wynn and Rule of Edmonton, architects, are preparing plans.

J. A. Craig is general manager of the Sidney Roofing Co., which is controlled by Garfield Weston.

Strathmore Advisory Council Meeting

Left to right: A. N. Jochem, Tulsa Paper Co., Tulsa, Okla.; H. E. Riggs, Vice President in charge of Sales, Strathmore Paper Co.; James D. Bligh, The Barton, Duer & Koch Paper Co., Washington, D. C.; Eric A. Rohrer, Swigart Paper Co., Chicago, Ill.; Guin C. Olson, Nackie Paper Co., Milwaukee, Wis.; E. M. Hughes, Blake, Moffit & Towne, Los Angeles (representing Arthur W. Towne, Blake, Moffit & Towne, San Francisco, Calif.); Robert Schmidt, Miller & Wright Paper Co., New York, N. Y., Chairman; George E. Williamson, President, Strathmore Paper Co.; Courtney Reeves, Carter, Rice & Co. Corp., Boston, Mass.; C. S. Lafferty, Beacon Paper Co., St. Louis, Mo.; Forrest Gillett, Chicago Paper Co., Chicago, Ill.; George Gray; Henry Lindenmeyr & Sons, New York, N. Y.; Robert Hartung, A. Hartung & Co., Philadelphia, Pa.; G. E. Caskie, Jr., Caskie Paper Co., Lynchburg, Va.; Sydney T. Jones, Sr., Hudson Valley Paper Co., Albany, N. Y.

DRYDEN EXPANSION PLANS

OTTAWA — Dryden Paper Co. plans to spend $935,000 on a new program of improvements at its mill at Dryden, Ont., President and General Manager E. L. Goodall has announced. This will be in addition to capital expenditures of more than $3,600,000 undertaken since 1940 for improvements and modernization.

This program will enable the company to reach an objective set some time ago to convert all its pulp production into paper products. It provides for the following improvements: (1) rebuilding of No. 2 paper machine for production of kraft papers. This machine has been out of continuous production since No. 4 machine came into production in 1948; (2) rebuilding No. 3 machine for increased production of machine glazed papers; (3) additional equipment on No. 4 machine to increase its production; (4) installation of equipment to modernize the power plant.

Work on No. 2 machine is expected to be completed by the end of this year and No. 3 and No. 4 machines by July, 1951. The whole program will be completed by the end of 1951.

Since 1940, Dryden Paper Co. has been progressively rebuilding its entire plant. Production for 1950 is estimated likely to reach 48,000 tons.

COLUMBINE MILL SITE

DENVER, Colo.—The site of the Columbine Development Co.'s proposed pulp and paper mill will be three and one-half miles east of New Castle, Colo. The 100-acre site is located south of Highway 6-24 and the Denver and Rio Grande Western Railroad and is between the railroad and the Colorado river.

The site was chosen largely because of the distance of haul from the Flat Top area of the White River National Forest, the main cutting area, and transportation facilities available for moving out the finished products.

Preston Walker, president of the company, states that, barring unforseen difficulties, actual construction should be under way early in 1951. A minimum of 18 months will be required to build the plant as originally planned. Walker has said that present indications are that the plant will be considerably larger than first planned. He does not believe the war will interfere and explained that the war situation has speeded up many details.

Left: D. B. Smith, president, Wausau Paper Mills Co., was the main speaker at the Fourth Annual meeting of the Wisconsin Press Assn., September 15, 16 at the Trees for Tomorrow Camp, Eagle River. Mr. Smith's topic was "The Paper Industry in Wisconsin." . . . Shown with Mr. Smith are left to right: Arthur Lenz, director of publicity and H. F. Nafziger, director of the School of Journalism at the University of Wisconsin, and Francis Schweinler, publisher of the Mosinee Times and president of the Wisconsin Press Assn. Mr. Smith stressed problems confronting manufacturers of paper today, stream pollution and the role that the paper industry plays in the economic structure of Wisconsin.

Tonnage Affected by Torquay

The Import Committee of the American Paper Industry has made a compilation of the tonnage to be affected by the Torquay conference, now under way for the international reduction of duty rates. This summary indicates that the paper industry is the American industry most seriously involved. Papers and paperboards comprising more than half of the entire domestic output are on the docket for negotiations.

Based on Census production figures for 1948, domestic grades to be affected include those in the table.

Of the balance of the grades not to be discussed at Torquay, many have already been subjected to the maximum reductions in duty permitted by law. These grades include 1,000,000 tons of fine paper, and 2,400,000 tons of wrapping paper. Also, of this total, 875,000 tons of standard newsprint are on the duty free list.

Grade	Total U. S. Production (Tons)	Tonnage Scheduled for Negotiation
Printing Paper	3,146,781	3,146,781
Paperboards	10,773,407	8,455,000
Tissue	1,260,671	900,000
Other Papers	6,740,898	500,000
TOTALS	21,921,757	13,001,781

GILMONT JOINS CROSSETT

CROSSETT, Ark. — Dr. Paul L. Gilmont has accepted a position in the Crossett Research Laboratory as group leader of pulp and paper research. Dr. Gilmont is a graduate of M.I.T. with a Ph.D. in chemistry. He comes to Crossett from the Central Research Laboratory of Rayonier, Inc., at Shelton, Wash.

DIAMOND PROMOTES WAGNER

NEW YORK — The appointment of William J. Wagner as manager of the Syracuse, N. Y., regional sales offices of The Diamond Match Co. has been announced by Eugene C. Reed, eastern divisional manager. Mr. Wagner has been engaged in special promotion work for Diamond's paper and pulp products.

NPA EXPANSION AND CHANGES

WASHINGTON, D. C. — Expansion of the National Production Authority, which is handling newly established war controls and priorities, is proceeding rapidly.

Both personnel and committee organizations called for by recently announced controls, are being added daily. An early appointment was that of H. B. McCoy as assistant administrator.

Latest appointments are W. Howard Chase, Ho-Ho-Kus, N. J., director of public relations for General Foods Corp., to be consultant to the administrator, NPA; H. George Wilde, Lenox, Mass., president of Lee National Bank, Lee, Mass., as assistant to the administrator, NPA; M. Manly Fleischmann, general counsel, of Buffalo, N. Y., and member of a law firm there (he was formerly general counsel of the War Production Board and predecessor agencies); there have been some collateral changes in other defense agencies.

Resignation of Hubert E. Howard as chairman of the Munitions Board has been announced, and Roscoe Seybold, Pittsburgh, Pa., who recently retired as vice-president in charge of finance, Westinghouse Electric Corp., has been named as vice-chairman of Munitions Board, and second in command at the Board.

James K. Knudsen, a commissioner in the Interstate Commerce Commission, has been named as Domestic Transportation Administrator, supervising all domestic transportation, of all types, including interstate or foreign commerce.

One result expected from the Korean war is a reversal of the trend of the past two years toward fewer export controls. Secretary of Commerce Sawyer has reported that his department is now reviewing export control aspects of recent developments, in the light of domestic supply requirements and security needs. He estimated, however, that for many materials, the export demand on this country may be less urgent than in the 1946-48 era when post-war shortages were still operating. This country's exports in many cases, have declined because of improved world supplies as Europe has recovered; relatively domestic demand and continued shortage of dollar exchange.

Among other actions, some applications to export zinc and zinc products, lead and lead products, aluminum, etc., are being returned without licenses, because of the large jump in number of requests for export licenses covering these commodities.

In any case, after October 1, exports of these products will be licensed on the basis of a fourth quarter export quota which is to be established. Filing dates for license applications will be announced in an Export Bulletin expected September 28.

The general expectation here is that any tight allocations policy will be deferred for some time, pending a closer determination of industry needs by the respective users. One of the early committees to be approved under the emergency program is an industry advisory group representing primary copper producers. Other industries' representation is being developed gradually.

NATIONAL BLANK BOOK BUYS AWP MILL

HOLYOKE, Mass.—The National Blank Book Co. has purchased the abandoned Riverside Div. of the American Writing Paper Corp.

This plant will give 175,000 square feet of additional floor space and increase the production facilities of the National by another 60 percent.

A 12-foot-wide steel bridge will be built across the railroad tracks linking the third floor of the present main plant of the National with the fourth floor of the Riverside, Richard P. Towne, president of the National, announced.

The purchase price was $121,000. This includes the land and the buildings, but not the two fourdrinier papermaking machines and supporting equipment in the building. They will be removed entirely by October 1, 1951. The upper floors will be cleared first, making about 80,000 square feet available for finished goods inventory by February of next year.

Edward C. Reid, vice-president of American Writing, said no definite plans have been made for the disposition of the machines. Some of it will be used in other divisions of AWP, it is understood.

The National has not formulated any definite plans for full usage of this new property yet. There will probably be manufacturing facilities installed there as the company continues to grow. To prepare the plant for use, National will have to spend at least another $125,000 in renovation.

BLANDIN IMPROVEMENTS

Blandin Paper Co., the famous windowless plant at Grand Rapids, is installing a Ross-Briner Economizer, and also Ross Engineering Heating & Ventilating System for their No. 1 machine.

GETS GOVERNMENT CONTRACT

GRAND RAPIDS, Mich.—Walter Goodspeed, president of the American Box Board Co., reported government contracts which totaled $472,460 have been awarded to the company in the last 60 days. One order, for 500,000 combat ration containers, accounted for $352,460, while an additional $120,000 for miscellaneous containers has been ordered by the government every month.

Government Inventories

The question has been asked us several times, "What are the inventory restrictions which the U. S. government has imposed upon itself?"

Our information is that as a general policy, all items on the critical list shall be reduced so that by June 30, 1951, the holdings in stock shall be limited to three, six or twelve months' supply. The type of item and the time required to obtain replacement will determine the amount so held. It shall be the responsibility of purchasing officer to hold to these minimums.

Paper is on the critical list. It would seem the amounts to be held would be determined in most cases by the suppliers. If they give government quick delivery, then low inventories would be expected, otherwise large stocks will be in the order of the day but you can never tell.

MANPOWER CONTROLS

WASHINGTON, D. C.—Believing that compulsions would be detrimental to the defense program, the Chamber of Commerce of the United States has urged use of voluntary manpower controls for rearmament.

With the approval of the Chamber's board of directors, the organization's Committee on Labor Relations reported:

"The value and effectiveness of voluntary action by both management and workers was well demonstrated in World War II. Such voluntary action should be continued now as the basis for manpower distribution."

If voluntary measures fail, the Chamber committee proposed that any compulsion adopted should be by authority of Congress in legislation containing adequate safeguards and that there should be no directives without specific Congressional authority.

The committee asked employers to begin now to take voluntary action locally, by areas and industries, to lessen any need for government controls. It urged avoidance of labor pirating; proposed making skilled labor available; asked extension of the employment of part-time, aged and handicapped workers and those not normally in the labor forces, and advocated use of training and safety programs.

C-Z INCREASES SERVICE BENEFITS

CARTHAGE, N. Y. — An increase of 50 percent in the past service benefits of employes enrolled under the Crown Zellerbach retirement plan has been ratified by the corporation stockholders, G. H. Gallaway, resident manager, announced.

The increase affects the benefits attributed to participants' service prior to September 1, 1945, when the retirement plan went into effect.

NEWSPRINT SITUATION

OTTAWA—Stories in circulation that Canadian newsprint producers are planning to establish a wider diversion of their exports so that there shall be less dependence on the United States markets and that this attitude is developing in resentment against the charges aired in Washington some time ago about Canadian producers curtailing production of newsprint are not backed up by inquiries made in informed quarters in the pulp and paper industry.

It is true that the Canadian newsprint producers did not like the insinuations against the Canadian industry as reflected in the Washington hearings because there is ample evidence that newsprint producers in this country have gone all-out to meet the United States demands and at times have given up chances of selling their supplies elsewhere in order to meet American publishers' demands. This attitude was adopted by the Canadian producers in face of criticisms heard in Canada against a policy which depended so heavily on one big market instead of spreading the supplies among many countries. Those who favored the latter policy have argued that, whereas United States imports of newsprint have fluctuated considerably in the past couple of generations, yet Canadian production has advanced steadily, with United States getting today approximately 80 percent of its needs in this respect as against 67 percent before the war from Canadian mills.

Press comments in Canada have favored a wider diversion of newsprint exports on the part of the Canadian industry since it is claimed that, in the long run, this policy might prove advantageous to Canada. However, inquiries indicate that Canadian newsprint producers do not favor holding back production and exports from United States customers. In fact, the Canadian mills are doing everything possible to increase their shipments to United States at this time, even showing a willingness in some instances to sacrifice substantial markets in other countries in order to meet the American requests for more newsprint for the balance of 1950 and early in 1951. This disproves completely widespread stories now in circulation that the Canadian pulp and paper industry, including newsprint producers, are planning to bring about a wider diversification of exports so that the industry may be less dependent upon the United States in the future than at the present time.

DOHNE JOINS HAWTHORNE

KALAMAZOO, Mich. — Announcement has been made by the Hawthorne Paper Co. of the appointment of William P. Dohne as technical director. Mr. Dohne was associated with W. C. Hamilton & Sons for the past seven years.

FOURDRINIER FOR INDIA

WILMINGTON, Del. — A $1,400,000 papermaking machine, weighing approximately 2,000 tons, was manufactured at the Pusey and Jones Corp. plant for shipment to India.

It was constructed for the Nepa Mills, located at Chandni, in the central provinces of India east of Bombay and nearly in the center of India. The machine is a 180-inch-wide Fourdrinier newsprint machine of the latest design with all the accessory equipment.

COTTON LINTERS CONTROL

WASHINGTON, D. C. — Export controls were imposed last week on cotton linters to all destinations except Canada, in order to enable this government to determine its defense requirements first. Shipments of Grades 5 to 7 were already under restriction except to Western Hemisphere destinations, with respect to so-called Group R countries.

WOOD PULP INVENTORY LIMITS

WASHINGTON, D. C. — The National Production Authority placed woodpulp under inventory limit controls in its first order this week.

Inventories will be limited to "a practicable working minimum" said the order. In addition, other commodities placed under the same limit were industrial ethyl alcohol; caustic soda, all grades, liquid and solid; chlorine, gaseous and liquid, and all grades of soda ash.

INDIA MAY MANUFACTURE NEWSPRINT

BOMBAY, India — According to research conducted at the Indian Forest Research Institute, Dehra Dun, paper mulberry *(Broussonetia Papyrierra)* bids fair to be a promising raw material for the production of mechanical pulp for the manufacture of newsprint.

Paper mulberry is a fast growing (attains pulpwood size 13 to 16 inches in 7 to 10 years) tropical species. The newsprint manufactured from paper mulberry on a commercial scale and at the instance of the said institute was "given a full scale printing trial on the high speed rotary of the *Statesman Press*, New Delhi" and has been found satisfactory.

MOSHER JOINS MIAMI VALLEY

FRANKLIN, Ohio — Alfred A. Srere, president of The Miami Valley Coated Paper Co., has announced that Robert H. Mosher has recently joined this organization in an executive capacity. Mr. Mosher will have charge of all manufacturing operations and related activities and in addition will be responsible for new product development and promotion.

In recent months, prior to his joining Miami Valley, he has been acting as an industrial consultant and has worked with several prominent chemical companies as well as a number of leading paper converters. He is the editor of the recently published book, "Specialty Papers."

NPA Names Neubrech

Leroy W. Neubrech, Chief of Pulp, Paper and Paperboard, Department of Commerce, has been appointed administrator of Industrial Operations, Pulp and Paper Industry under the National Production Authority.

CANCO NAMES STALEY

NEW YORK — A. C. Staley, Jr., assistant general manager of sales for the American Can Co., has been appointed manager of sales for the company's Pacific division. He succeeds Dr. R. H. Lueck who has been named general manager of research with headquarters in New York.

Mr. Staley has been with the container manufacturing firm since 1937 when he joined the company's Chicago sales organization. He served as sales representative in the Chicago and Wisconsin areas and as the assistant district manager in Wisconsin until 1944 when he entered the navy. Following the war, Mr. Staley was named assistant sales manager for Metropolitan New York and later became manager for the district. He has been assistant general manager of sales since January, 1949.

In his new post, Mr. Staley will have supervision over sales activities on the West Coast, Hawaii and Alaska. His headquarters will be in San Francisco.

FRASER OFFICIALS TO EUROPE

Aubrey Crabtree, president and general manager of Fraser Cos., Ltd., Edmundston, N. B., Canada, and subsidiaries, Fraser Paper, Ltd., and Restigouche Co., Ltd., sailed for Europe on Sunday, September 24, from New York, aboard the *Mauretania*.

Accompanying Mr. Crabtree are William A. Ketchen, chief chemist of Fraser Cos., Ltd., and subsidiaries; Cecil M. Matheson, general sales manager, Pulp and Paperboard Divisions of Fraser and general sales manager of Restigouche; and Clarence T. Clark, mill manager of the Restigouche Pulp Mill in Campbellton.

While abroad, they expect to spend some time in the United Kingdom, France, and some of the Scandinavian countries.

T&H WIN SAFETY BANNER

BOSTON — Tileston & Hollingsworth, paper manufacturers, are the current group winners in a State-wide Industrial Safety Contest conducted by the Industrial Division of the Massachusetts Safety Council. They are winners on the basis of frequency and exposure, and are entitled to display the safety banner for the next quarter in recognition of the accomplishment.

INSTALL ROCKWOOL OVEN

NEW YORK — Johns-Manville has purchased a large, special Rockwool oven involving both Ross Engineering and John Waldron Corp. equipment. This is to be installed in their Richmond, Ind., plant.

C. M. Fehr and V. C. Lane, sales engineers, have been assigned all technical service work in the Philadelphia, Paterson, Pittsburgh and Cincinnati districts. H. R. Bishop, formerly sales representative in Chicago, has been transferred to fill a similar post in the Paterson office.

VAN WAGNER, SALES MGR.

GREENSBORO, N. C.—Charles A. Van Wagner is the new divisional sales manager of the National Container Corp., with offices in the Jefferson Standard Life Insurance Building here. Mr. Van Wagner will supervise sales activities in Virginia and the two Carolinas.

"National Container has located its divisional offices in Greensboro because a company survey disclosed that the Greensboro trading area has one of the most promising futures of any area in the South," Mr. Van Wagner stated.

STREAM POLLUTION

PALM BEACH, Fla. — In connection with a meeting of the Wildlife and Fish Assn. the question was raised anent industrial waste from paper mills polluting the streams.

Russell L. Winget of New York, executive secretary of the National Council for Stream Improvement sponsored by the pulp, paper and paperboard industry, declared that this industry is keenly interested in water problems because a 400-ton kraft pulp mill uses as much water daily as a city of 80,000 persons. There are seven such mills in Florida, Winget noted.

Mr. Winget quoted a report after a year-long study saying Florida's pollution problem from the pulp and paper industry "is not of statewide significance and consists of scattered local situations." Winget described the industry as second only to food processing in Florida manufacturing. It employs 6,000 workers and has a payroll of $25 million a year, he said.

B-D PULP CO. IN GOLF MEET

NEW YORK — Annual golf party of Bulkley-Dunton Pulp Co. held at Deepvale Country Club, Great Neck, L. I., on Thursday, September 14, ended in a four-way tie for first place which was settled amicably. Following the afternoon's golf, the pulp company and its guests dined at Metropolitan Club, New York.

Patent Abstracts

● *In addition to abstracts on the technology of pulp, paper and related industries, miscellaneous abstracts which may provide useful information are included.*

United States

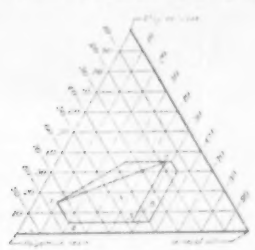
2,517,532 — Dispensing Machine for Paper Cups and the Like. Herman Carew and Wayne M. Mack, Easton, Pa., assignors to Dixie Cup Company, Easton, Pa. Filed July 25, 1947 — Issued August 8, 1950.

In a cup dispensing machine of the character described, a dispensing mechanism for delivering individual cups from a stack of cups, a carrier for a plurality of supplemental stacks of cups, means for intermittently actuating the carrier to present a fresh stack of cups as a preceding stack nears depletion by the dispensing means, and a lever operated by the cups of the immediate stack being dispensed associated with the carrier-actuating means, said carrier-actuating means including a rotating drive shaft, and a driven shaft having rotating gear connections with said carrier and said drive shaft, one of the said gears being movable to disconnect the drive to the carrier, said cup operated lever controlling the movements of the movable gear.

2,517,577 — Preparation of Carboxyalkyl Ethers of Cellulose. Eugene D. Klug and John S. Tinsley, Wilmington, Del., assignors to Hercules Powder Company, Wilmington, Del. Filed December 10, 1946 — Issued August 8, 1950.

In a process in which cellulose is reacted in the presence of strong alkali and water with a carboxyalkyl halide etherification agent to form a cellulose carboxyalkyl ether, the improvement which consists in carrying out the etherification reaction in a reaction medium comprising alcohol selected from the group consisting of isopropyl alcohol and tert.-butyl alcohol in an amount of at least 1.5 parts for each part of water present in the etherification reaction mixture and sufficient to maintain the cellulose ether formed in a solid, undissolved state throughout the reaction.

2,517,754 — Hot-Melt Coating Composition. Arthur E. Young and Kenneth D. Bacon, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich. Filed November 13, 1945 — Issued August 8, 1950.



A wax-free hot-melt coating composition consisting essentially of an ethyl cellulose, having an ethoxyl content of 47.5 to 50 per cent and a viscosity of less than 30 centipoises when measured on a 5 per cent solution thereof, by weight, in a mixture of 80 parts toluene and 20 parts ethanol, a pale, refined mineral oil having a viscosity between about 40 and about 100 Saybolt units at 210° F., and an ethylene diamine polyamide of a partially polymerized acid selected from the group consisting of linoleic and linolenic acids, having a molecular weight in the range from about 3000 to about 5000, the proportions of the three ingredients being represented by the area A on the accompanying drawing.

2,517,832 — Apparatus for Purifying Fibrous Suspensions. Finn Blikstad and Erling Pedersen, Sarpsborg, Norway. Filed January 10, 1946 — Issued August 8, 1950.

Apparatus for purifying fibrous suspensions, comprising in combination a sand-trap, a vibratable flat screen located on top of the sand-trap, means for vibrating the screen substantially only in a vertical direction a vibrations-transmitting partition wall which divides the space between the screen and the bottom of the sand-trap into an upper and a lower portion and which at one end of the sand-trap provides a passage between the two portions, the upper portion having a substantially smaller cross-section than the lower portion, and means for moving a current of fibrous suspension serially through the lower portion, the passage and the upper portion and into contact with the screen.

2,518,014 — Carton Folding Machine. William H. Inman, Newark, N. Y., assignor to Bloomer Bros. Company, Newark, N. Y. Filed August 9, 1946 — Issued August 8, 1950.

A machine for folding a blank to form a fluid tight carton of the type having a bottom, upwardly folded side walls, corner flaps foldably connected with adjacent side walls and folded and overlapped in pairs against the outer sides of one pair of opposite side walls, and interengaging means on said flaps, respectively, for locking the flaps of each pair together, said machine comprising a support for said carton bottom, wings mounted to swing at opposite sides of said support for folding the other pair of opposite side walls upwardly and said corner flaps outwardly and thereby folding the first mentioned side walls upwardly, devices movably mounted on said wings for moving the flaps of each pair into interlocking engagement with each other, and mechanism for operating the parts of said machine.

2,518,042 — Automatic Paper Feed Cutoff. Alfonso Martell, Bloomfield, N. J. Filed May 13, 1947 — Issued August 9, 1950.

An attachment for use on a printing press having a printing cylinder, conveyor means having courses receiving printed sheets from the press; a mechanism for feeding sheets to the press, including an oscillatory part and means for stopping the mechanism when said part is stopped; said attachment comprising in combination a magnet; a guided plunger bolt adapted when the magnet is energized to be withdrawn toward the magnet; a plunger rod slidably reciprocatorily guided transverse to said bolt at the end of the bolt when the bolt is retracted, and connected to said part and adapted to be stopped by the bolt when not retracted thereby to stop said part; a switch mounted under the path of the printed sheets and connected in series circuit with the magnet; a feeler connected to the switch and adapted to be pressed beyond the plane of the printed sheets when no sheet is present, thereby to open the switch.

2,518,104 — Apparatus for Drying Material in the Form of Webs. Sven Wellmar, Abrahamsberg, Sweden, assignor to A. B. Svenska Fläktfabriken, Stockholm, Sweden. Filed September 27, 1946 — Issued August 9, 1950.

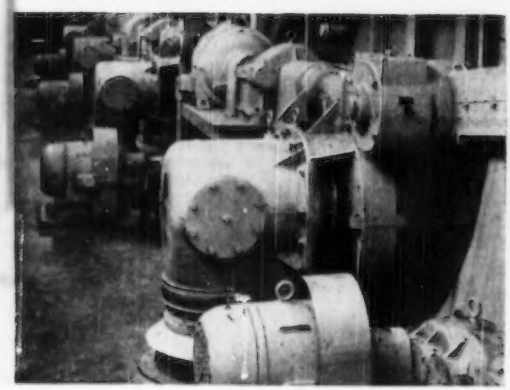
An apparatus for drying web material comprising a casing having an inlet and an outlet opening for the web, plates in said casing dividing it into an even number of longitudinal substantially horizontal channels arranged one above the other and communicating in pairs in such manner that the upper channel of each pair at its both ends is in communication with the channel positioned immediately below so as to form a zigzag-way in said casing for said web, an inlet and an outlet pipe in said casing for entrance and escape respectively of drying medium, a vertical box at the middle of each longitudinal side-wall of said casing extending substantially the depth thereof, a partition in said box dividing it into two vertical chambers, said partition having openings and a fan in each opening, said fans being arranged to operate in the manner that one of said vertical chambers acts as a pressure chamber and the other as a suction chamber for the drying medium of the apparatus, said pressure chamber having a vertical row of outlet openings for said drying medium communicating said pressure chamber with alternate channels in said casing, said suction chamber having a vertical row of inlet openings for said drying medium communicating the remaining channels in said casing with said suction chamber, said alternate channels which are in communication with the outlet openings from the pressure chamber of the box at one side of the casing being also in communication with the outlet openings from the pressure chamber of the box at the other side thereof, and said alternate channels which are in communication with the inlet openings to the suction chamber of the box at one side of the casing being also in communication with the inlet openings to the suction chamber of the box at the other side thereof, said vertical row of outlet openings from the pressure chamber in the box on one side of said casing being arranged on one side of a vertical transverse plane through said casing, and said vertical row of outlet openings from the pressure chamber in the box on the other side thereof being arranged on the other side of said vertical transverse plane so that the streams of drying medium entering the channels through said outlet openings from said pressure chambers do not meet and interfere with each other in the channels.

2,518,133 — Continuous Precipitation of Cellulose Derivatives. Herman Fox, Highland Park, N. J., assignor to Hercules Powder Company, Wilmington, Del. Filed December 26, 1947—Issued August 8, 1950.

A single-stage continuous process for obtaining particles of an organic ester of cellulose of uniform predetermined size from a solution of said ester in a water-miscible solvent which comprises continuously introducing the solution of the ester into a precipitating chamber, simultaneously and continuously introducing into the precipitating chamber an aqueous liquid of the group consisting of water and dilute aqueous acid mixtures in an amount sufficient to cause substantially complete precipitation of the cellulose ester from its solution upon contacting and mixing the two, simultaneously and continuously vigorously agitating the solution and aqueous liquid to effect intimate mixing of the two and precipitation of the cellulose ester, simultaneously and continuously milling and grinding the precipitate of cellulose ester in the precipitating chamber as it is formed to a predetermined uniform particle size, and simultaneously and continuously discharging the milled and

TEAMED TO BEATERS!
In the Lee Paper Co. mill at Vicksburg, Mich., these beaters are driven by G-E wound-rotor induction motors, supplying the high starting torque required to dislodge settled stock. At left, an assembly of G-E Cabinetrol* centralizes low-voltage motor control in compact units, factory-assembled for lower installed cost and metal-enclosed for better protection and appearance.

Teamed to pay off at



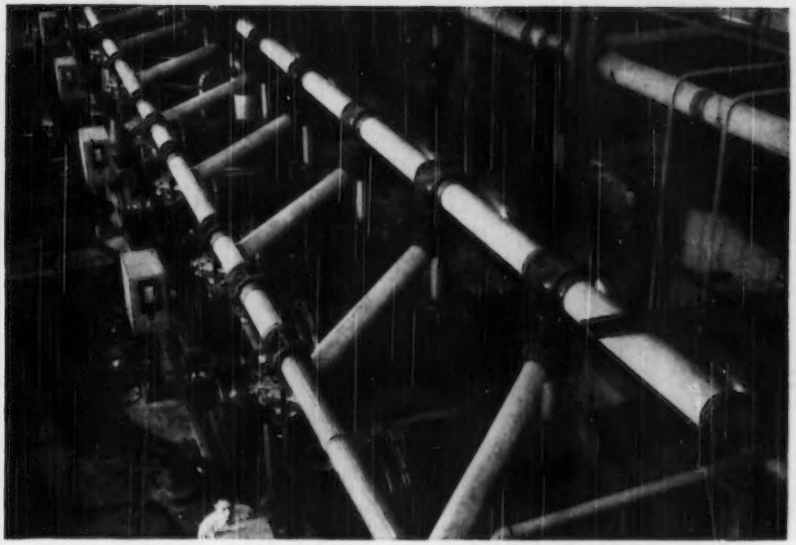
TEAMED TO WASHERS! In the Fibreboard Products, Inc., mill at Antioch, Calif., G-E speed variators (top), enclosed and separately ventilated, give economical, adjustable-speed drive for this multi-stage kraft washer. The floor-mounted G-E totally enclosed, fan-cooled induction motors driving the repulpers between stages are protected against corrosion, water, fumes, dirt and dust.

TEAMED TO REFINERS! In a southern pulp and paper mill, these G-E 300-hp 2300-volt synchronous motors driving refiners are controlled by a lineup of G-E Limitamp* controllers at upper left. Providing high interrupting capacity at minimum cost to protect high-voltage motors, Limitamp prevents costly repairs due to short circuits, safeguards the paper-mill's production continuity.

*Registered Trademark of General Electric Company

GENERAL ELECTRIC

655-5



TEAMED TO JORDANS!

In the St. Regis Paper Co. mill at Tacoma, Wash., a battery of Jordans is driven by G-E synchronous motors. Advantages of these G-E Tri-Clad® motors include reliability, high efficiency, ability to improve mill power factor, and constant speed regardless of load. Dependable in operation, they're made by G.E. in low and high speed types, with various enclosures to meet paper-mill conditions.

your paper machine!

G-E equipment and services for pulp processing help maintain continuous production of uniform-quality stock

APPARATUS

—to help cut costs in stock preparation!

Teamed up with your stock preparation equipment, dependable General Electric drives reduce production interruptions, help assure uniform-quality stock. That means higher output at the paper machine!

You get the right drive! You may choose motors or turbines, constant speed or adjustable speed, from the wide G-E line. Thus you get the right drive for your pumps, beaters, refiners, agitators, washers, etc. . . . the proper enclosure for every paper-mill condition . . . the most economical voltage level . . . and the right control, full or reduced voltage, individual starters or centralized assemblies for lowest installed cost.

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ground precipitate from the precipitating chamber through restricted uniform openings of predetermined size.

2,518,241—Preservative Compositions for Cellulosic Materials. James F. McCarthy, Mars, Pa., assignor to Treesdale Laboratories, Inc., Allegheny County, Pa. Filed May 29, 1945—Issued August 8, 1950.

A substantially colorless, fire- and waterproofing composition consisting of approximately 42 per cent by weight of a mixture of chlorinated paraffins, one having a chlorine content of about 70 per cent and the other a chlorine content of about 42 per cent, from 4.5 to 6.5 per cent by weight of an unmodified phenol-formaldehyde resin which is in the soluble, fusible stage, from 22 to 24 per cent by weight of finely divided calcium carbonate, from 14.7 to 19.7 per cent by weight of antimony oxide, and approximately 1 per cent by weight of aluminum stearate, said composition being admixed in the presence of from 7 to 14 per cent by weight of an aromatic hydrocarbon solvent.

2,518,359 — Coating for Insulation Boards. Henry Z. Mohrer, Chicago, Ill., assignor to United States Gypsum Company, Chicago, Ill. Filed July 21, 1947 — Issued August 8, 1950.

A liquid coating composition suitable for application to wet insulating board during its process of manufacture consisting essentially of an aqueous gelatinized starch vehicle, pigment-fillers, and an amount of tributyl phosphate equal to from about 20% to about 80% by weight, as calculated on the starch in the composition.

2,518,438—Protective Coatings. Helen Sellei Beretvás, Chicago, Ill., assignor to Nox-Rust Corporation. Filed November 5, 1945—Issued August 15, 1950.

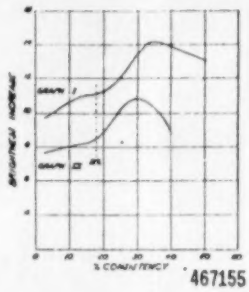
A liquid mixture for producing a resin like protective coating for surfaces consisting essentially of at least 2 per cent of a metal naphthenate soap formed from naphthenic acid and a metal of the group of copper, magnesium, calcium, zinc, strontium, barium, tin, lead, chromium, manganese, iron, cobalt and nickel, a metal tall oil soap formed from tall oil acid and a metal of the group of copper, magnesium, calcium, zinc, strontium, barium, tin, lead, chromium, manganese, iron, cobalt and nickel, and a carrying vehicle which acts as a solvent for said soaps.

2,518,680 — Wood Pulp. Kenneth Russell Gray, Shelton, Wash., assignor to Rayonier Incorporated, Shelton, Wash. Filed June 22, 1945 — Issued August 15, 1950.

In a method of producing an improved wood pulp from a refined wood pulp containing not over 0.15% of natural ether extractable matter consisting of saponifiable matter and not over 0.07% of oil soluble unsaponifiable matter, ascertaining the quantities of saponifiable and unsaponifiable matter in the pulp and adjusting the percentages thereof to a predetermined norm, not over 0.15%, by the addition to the pulp of at least one of the said forms of ether extractable matter, the saponifiable addition being a compound of the group consisting of fatty acid and resin acid which when saponified is a water soluble soap, and the unsaponifiable addition being an oil soluble alcohol selected from the group consisting of an aliphatic alcohol containing at least 10 carbon atoms and a cycloaliphatic alcohol containing at least 10 carbon atoms whereby pulp having uniform characteristics is produced from different types of woods.

Canadian

467,155—Methods of Bleaching Mechanical Wood Fibres. Robert L. McEwen, Williamsville, New York, U.S.A., assignor to Buffalo Electro-Chemical Company, Inc., Tonawanda, New York, U.S.A. Filed October 25, 1948 — Issued August 8, 1950.



The method of bleaching fibres of ground wood which comprises moistening the fibres with an alkaline peroxide bleaching solution at fibre consistencies of 20 to 35 per cent bleaching the fibres at said consistencies and maintaining the temperature of the so-treated fibres below about 80° C. and above about 40° C. during the bleaching treatment.

467,183 — Cigarette Paper Booklet Machines. Otto Frederick Goepfert, Pisgah Forest, North Carolina, U.S.A., assignor, by mesne assignments, to Ecusta Paper Corporation, Wilmington, Delaware, U.S.A. Filed May 28, 1946 — Issued August 8, 1950.

In a cigarette paper booklet machine, the combination with means for feeding a plurality of strips of cigarette paper in superimposed relation to constitute the leaves of a cigarette paper booklet, means for folding an enclosing wrapper strip of cover paper in cover relation to said strips of cigarette paper, means for severing the wrapper enclosed strips of cigarette paper in booklet lengths, and means for collating and collecting the severed lengths of wrapper enclosed cigarette paper in the form of booklets as delivered from said severing machine, of, a device for applying adhesive to bond the cigarette papers in said enclosing wrapper cover comprising a closed adhesive reservoir, a valve element, means for forcing adhesive from said reservoir to said valve element under pressure, and a plunger member disposed for reciprocation in said valve element and arranged to release and confine the adhesive forced to said valve element alternately during complementary periods of each cycle of reciprocation of said plunger member, whereby the adhesive may be deposited intermittently to provide a separate adhesive deposit on said enclosing wrapper strip of cover paper for each booklet formed at said severing device.

467,207 — Portable Tree Girdling Machines. Frank Davison, Vancouver, British Columbia, Canada, assignor to Industrial Engineering Ltd., Vancouver, British Columbia, Canada. Filed October 31, 1947 — Issued August 8, 1950.

The combination with a wholly self-contained prime mover having a shaft, of a cutter head mounted upon the said shaft, said cutter including a circular saw and a plurality of cutting elements, said cutting elements being assembled in face-to-face contact with the saw and each other, the several cutting elements being of progressively decreasing diameters from the circular saw outwards.

467,279 — Charging Suspended Particles. Harry J. White, Princeton, New Jersey, U.S.A., assignor to Western Precipitation Corporation, Los Angeles, California, U.S.A. Filed March 22, 1946 — Issued August 8, 1950.

A method of charging particles which comprises passing a gas containing suspended particles through an electric field alternating between spaced non-discharge electrodes at a period less than half the transport time of gaseous ions between said electrodes and subjecting the gas while passing through the alternating field to ionizing discharge impulses having an impulse duration substantially less than half the period of the alternating field.

467,294 — Methods of Making Wallboard and the Like. Robert J. Thompson, Weston, Ontario, Canada, and William H. Carlton, Toronto, Ontario, Canada. Filed April 13, 1948 — Issued August 15, 1950.

The method of making a laminated sheet which comprises dispersing water in soluble, uncured thermosetting plastic particles throughout a pulp slurry comprising wood fibres and water forming the slurry into a sheet, removing the bulk of the water from the sheet until it is self-supporting, removing the remainder of the water from the sheet under pressure applied at a temperature below the curing temperature of the thermoplastic particles entrained with and dispersed throughout the wood fibres, and applying veneer sheets to the exterior surfaces of said fibre sheet under pressure applied at a temperature above the curing temperature of the thermosetting plastic particles.

467,307—Methods of Creping Paper and Other Material and Apparatus Therefor. Karl Einar Lage Grettve, Lilla Edet, Sweden. Filed December 19, 1945 — Issued August 15, 1950.

Machine for creping paper and other foils by means of an endless band of rubber or other elastic material which is passed over cylinders, the foils being brought to the band at a point where the band is tensioned and taken off at a point where the band is less tensioned, characterized therein that the band has such a thickness in relation to the diameter of the cylinder, to which the foil is brought, that, when the band is bent over the cylinder, the surface of the band, which is to cause the creping effect, is so much lengthened and thereafter shortened when the band leaves the cylinder that the foil becomes creped.

467,315—Manufacture of Composite Fibrous Sheet Material. Henry Kremer, London, England. Filed April 2, 1946 — Issued August 15, 1950.

A process for the manufacture of a composite fibrous sheet material comprising treating a minor proportion of fibrous pulp material consisting essentially of long fibres and a major proportion of fibrous particulate material consisting essentially of granules with a solution containing protein to deposit the protein on the fibres, treating the once-treated fibrous materials with a thermosetting synthetic resin to deposit the resin upon the coated fibres and forming the treated materials as a slurry into a sheet and subjecting the said sheet to heat and pressure to form a rigid sheet material.

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Mechanics of Curlation

JAMES COGHILL[1]

Curlation is a mechanical process for the treatment of pulp which differs radically from any previous process regarding both the character of the results produced, and the manner in which the fibers are manipulated. The process of Curlation and the Curlator were disclosed at the 1949 Annual Meetings of the Technical Groups of the Pulp and Paper Industries of Canada and United States in papers presented by Dr. H. S. Hill, Dr. J. Edwards, L. R. Beath and F. P. Silver, all of Price Brothers & Co., Limited, of Quebec.

The process is unique among fiber treating methods, in that it may be conducted in the laboratory with small equipment and results so achieved are the same in every respect, including the power consumption, as the results of full scale equipment on the same pulp. On this account the effect of Curlation on pulp and the results to be expected were thoroughly understood long before commercial equipment was available.

This commercial equipment, the Curlator, is the product of a cooperative effort, over a period of years, by two long established companies, each prominent in its own industry. One, a manufacturer of paper, contributed the discovery of the Curlation process as a new approach in the treatment of papermaking fibers. The other, a designer and builder of precision machines, contributed the engineering skill for development of practical equipment to implement the process.

The Curlator, as a machine, is so different from any other machine that engineers have, no doubt, wondered what might be the explanation for the strange arrangement of parts and motions. It is the purpose of this talk to point out, briefly, some of the basic characteristics of the process which must be accommodated by any machine intended to perform the operation. When these characteristics are understood it becomes apparent why the Curlator is designed as it is.

In the Curlation process the pulp must be thickened to consistencies in the order of 25 percent B.D. under conditions which promote the formation of nodules, or tiny balls of fiber. These nodules must then be rolled in different directions between surfaces which compress them while they roll. This brief statement expresses the fundamentals of the process. A practical machine must be able to accomplish the above while the pulp is supplied at one point and continuously delivered at another.

This does not sound too difficult. It is only necessary to determine under what circumstances pulp can be "thickened to 25 percent consistency under conditions which promote the formation of nodules," and under what circumstances the nodules will "roll in different directions between surfaces which compress them while they roll."

So far as fundamentals are concerned the thickening step can be dismissed rather briefly. If stock at pumping consistencies is to be thickened under conditions which promote the formation of nodules, or rolled up balls of fiber, it must not be permitted to form in a felted mat. Also there must be present some mechanical motion, preferably of a circular nature, which will help the fibers roll up into balls while the thickening is in process. In thickening from pumping consistency to 25 percent a pulp passes through a stage in which it must be kept hold of by mechanical elements urging it in the direction in which it is intended to go. Chemical pulp in the range of 12 to 18 percent consistency in semi-nodulated form is so sticky, and loses its water so readily under any pressure, that it must be mechanically handled by no uncertain means. The physical arrangements of the parts and motions to accomplish this dewatering step are dictated by the type of machine which is devised to perform the second step of rolling.

Nature has provided our chemical pulps with characteristics effecting their willingness to roll in nodule form under the conditions required for Curlation. We call these characteristics the "Curlation Number" of the pulp. The Curlation number of any pulp is the maximum number of pounds per square inch that a layer of the nodulated pulp will support while being rolled at the speed of 160 feet per minute and at a temperature of 70°F. The speed referred to is the speed of the moving surface while the layer of pulp is in tractive contact between a moving and stationary surface. When the maximum pressure is exceeded a shear plane forms within the layer of pulp. We call this "slipping or skidding," and when slipping occurs in a layer of nodules the process of Curlation ceases and no effective work is done on the pulp. Each different pulp has its own Curlation number. Pulps of the same type from different mills may vary widely. For sulphite pulps the figure may range from 5 pounds per square inch to 15 pounds per square inch.

It is the objective of the machine designer to get as much work performed in a given space as possible but it is apparent from the above that the pulp itself has characteristics which limit the amount of work that can be done in a given space. If a pulp which is to be curlated will support only 10 pounds per square inch without "slipping" and the coefficient of friction of the rolling nodules is 70 percent it is apparent, through calculations which need not be repeated here, that the maximum work that can be performed on that pulp will be at the rate of 4.9 horsepower per square foot of curling area at 160 feet per minute. This means that a machine which will consume 50 horsepower must have approximately 10 square feet of curling area where the nodules are being rolled under the maximum possible pressure.

Another factor now enters into the picture and that is the speed at which the nodules can be rolled without "slipping." When the speed is increased the pressure must be reduced. In general, power can be absorbed and the Curlation process performed most effectively at speeds ranging between 120 and 200 feet per minute.

Two conclusions can now be drawn with respect to any machine designed to curlate pulp.

1. On account of the relatively large area required to effectively consume power in this operation the working area must be so disposed that all of the pulp being treated is subjected to the same pressure, closely approaching the maximum it will stand without "slipping." The arrangement of the mechanical parts must be such that the pressure can be controlled quite precisely without being affected by conditions of operations such as quantity of throughout and other variations.

2. All of the working area of the machine must operate at the same speed. Otherwise the speed of the whole machine, and hence the amount of effective work done, must be reduced to the point where the maximum speed is not so high as to produce "slipping."

The arrangement of mechanical parts and motions which were adopted, and which have been described and illustrated elsewhere, was dictated by the above conclusions. The upper working surface, which is the Driving Plate, moves with a gyratory motion so that

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Condensation of Talk at the Empire State TAPPI Spring Meeting, Thousand Islands Club, June 25, 26 and 27, 1950.

[1] Vice-President, Curlator Corp.

all points on its surface travel in circular paths at exactly the same speed. It is supported in such a way that it can be forced down against the layer of nodulated pulp, while it is gyrating, with a regulated pressure and it can float freely up and down, within limits, to prevent this predetermined pressure from being exceeded on account of variations in operating conditions, such as throughput. The gyratory motion of the Driving Plate provides an excellent mechanical agitation of the pulp while it is being thickened through the 10 to 20 percent range. The arms of a slowly rotating Sweep clear the pulp from a perforated Dewatering Plate while advancing it outward toward the working zone and the upper surfaces of the arms cooperate with the gyratory motion of the Driving Plate to intermittently pinch successive wads of pulp in order to obtain the high consistency required.

The magnitude of the forces involved will be of interest to engineers. Since the process must be conducted at low speeds, the forces become relatively high. A C-50 Curlator operating at 130 feet per minute and consuming 70 horsepower generates a force of 17,800 pounds to push the Driving Plate horizontally on the layer of pulp. At the same time a downward vertical force of about 26,000 pounds is applied by the Driving Plate on the layer. The "power push" (17,800 pounds) is a "run-around" force and its reaction must be carried around through the frame of the machine between the upper and lower working surfaces. This accounts for the weight and rugged construction of the machine.

This brief discussion has pointed out the general engineering considerations involved in the Curlation process. During the past seven years a vast amount of experimental data has been accumulated including studies of many kinds and conditions of pulp and relating to speeds, forces, layer thicknesses, temperature, Curlation number, and other factors.

Technical Control for Paper Mills*

Arthur J. Haug[1]

Introduction

Signs of the times all point to a demand, not only for better products in all lines, but consistency in the quality of those products. The demand is for a high level of quality and for that same level to be present in each and every unit in all orders or lots.

For operating people, this demand engulfs a wide number of problems which must be solved before the quality bull's-eye can be hit consistently. You are the men who are responsible for the machines putting out paper and board which will be evaluated finally in use as to whether or not the quality is there.

There is no need to dwell on the number of variables which are involved and which have influence on the final result. They range from the raw materials through the machines and, finally, the human element.

This last item is of utmost importance. It is not the purpose of my talk to deal with the men who prepare the pulp and run the machines; but the picture would be incomplete without just a word in this regard. No matter how perfect machine conditions may be (new clothing, rolls in perfect crown, furnish uniform and in the desired range), without the know-how and the desire on the part of operating personnel, poor qualities can still result. This thing of which I speak is a gigantic problem built jointly by personnel relations, by proper initial training, by close and constant contact through supervision, and by a consistent program of telling the people what is wanted, why it is wanted and whether they are getting it.

The purpose of this talk is to cover my concepts and ideas about technical control as it is applied to papermaking and how it results in quality control. Control information and data can be of great help to operations if it is understood by everyone and if it has been realistically developed.

It would be well, at this time, to review the objectives of technical control.

Objections of Technical Control

1. IMPROVED QUALITIES
2. GREATER UNIFORMITY
3. REDUCED COSTS

Let us assume that you have not used technical control as a means to obtain consistent quality and that you wish to put it into effect in your mill. What are the steps, the procedure that you might follow?

Steps for Establishment of Quality Control

1. What Do You Have?
   Analysis of Practice
2. What Do You Need?
   Analysis of Requirement
3. How Can You Obtain What You Need?
   Control
   Suppliers
   Men
   Machinery and Equipment

In the complete answer to the three questions: What do you have? What do you need? And how can you obtain what you need?—pretty well rests the solution to the various problems we are going to consider.

The following points are to be covered in this discussion: (1) papermaking raw materials, (2) control of these papermaking materials in the process, (3) final product qualities, and (4) insurance of the product's reaching the market in good condition. The scope of my material, as you can see, represents enough fuel for the fires to last 50 days instead of 50 minutes. It is my purpose to explain a method of approach to each one of the points so that perhaps each of you will be able to make some application to your own specific problems.

Papermaking Raw Materials

Of course, wood fibers are our chief raw materials. In order to evaluate these materials, whether virgin pulp or waste paper or board, it is necessary to have the proper facilities and trained personnel. The installation need not be large or pretentious, but it should include adequate pulp testing equipment, capable of giving reproducible results.

Extensive testing of all pulps and waste then must be carried out to find out "What we have." At first, all tests should be run (burst, tensile, fold, tear, brightness, fractionation, dirt, pH, KMO_4 No. — if unbleached, freeness). Tests should be made on each shipment or lot of pulp and records carefully kept. In mills where the furnish consists of a single pulp, the job is finished. However, where the furnish consists of a blend of two or more pulps, then this same pulp testing should be performed on samples collected before any beating or refining is done. Generally speaking, it is not difficult to determine "What you have."

* Presented at the annual Spring Meeting of the Pennsylvania-New Jersey and Delaware Division of American Pulp & Paper Mill Superintendents Assn., York, Pa., May 5 and 6, 1950.
[1] Technical Director, Chester, Pa.

The next question, however, is not answered so easily. And that question is, "What do you need?" This requirement is going to be different probably for each and every one of you, even for mills making the same product. For here it is necessary to take the pulp and furnish data and use it in conjunction with machine operations, with finishing operations and with final product qualities. The study of these data is a complex task; and it should be done by some one person or a group who knows pulps, operation and quality objectives. This comment brings to mind the words of a teacher I had and for whom I have the greatest respect. He is Otto Kress, who has retired recently as Technical Director of the Institute of Paper Chemistry. He used to say that anyone who couldn't keep 10 balls in the air at the same time wasn't worth a darn. So put your best jugglers at this job; and I am sure that you will observe, after a time, that one or more of the pulp testing results correlates with paper machine operations and finished product qualities.

Having established which of the pulp qualities are important for your process and your product, then effort should be made to obtain fibrous raw materials which satisfy these requirements. The achievement of "what you need" can be obtained by intelligently working together with your suppliers. A similar testing procedure should be carried out as far as possible with the other raw materials you use in your process. By these materials I mean rosin, alum, glues, fillers, coating materials, pitch control agents, etc. With some of them, it may not be possible to obtain any clear-cut cases or instances of changes in operation or qualities. However, either by practice or choice, a quality level for these materials should be selected, and only material which meets these specifications should be used.

With the establishment of a means of control at the very start of the process, the raw materials, you have taken a big stride towards the quality bull's-eye. What is extremely important is that you will have these facts even before the materials are used, and adjustments can be made ahead of time and variances expected before trouble is at hand.

Process Control

The next phase in our discussion involves these same raw maerials as they are put into the process and follows them through the paper machine. Here again we must find "what we have," and this seeking involves a testing program. At first, it is necessary to take many tests at many locations to form the basis for the system which eventually will prove of value.

As a result of the previous investigations, information concerning the furnish is available. Important information may result on sampling after beating, after refining, in the headbox or in the vat. Consistency of the stock, its freeness, pH, strength or fiber length are some suggested tests. There are perhaps others which might prove useful for your specific case.

The same juggling act is necessary here in order to establish which test or tests in which location have the most direct bearing on machine operation and finished product qualities. After these trends have been established we again have to answer the second question: "What do we need?"

Obtaining what we need, in this case, is up to the operating group backed by the Technical Department and the Engineering Department. It is the people who furnish the beaters and regulate the beating cycle, who add the chemicals, who check the consistency regulators, who set the jordans, and who run the paper machines and make the machine settings—the people who deliver "what we need," since they are the ones who affect the raw materials in the system.

It is wise, I believe, to have a group independent of production to make all tests. In this way, objective results and decisions are more certain.

In order to meet the desired range as measured by process data, engineering studies of machinery and equipment may be necessary. There may be swings in this process data which can be explained only after detailed study of stock flows, white water balances and equipment performance.

Close review of the data from day to day often will show a trend away from the normal pattern which has been established by the system itself. When this shifting takes place, there must be an explainable reason. The reason, when uncovered, often results in an improvement in the operation.

Final Product Qualities

When we move to the third section of our program, you may well call it Pay Dirt Territory. It is the bull's-eye as which we have been aiming. The final product qualities have been the yardstick by which the raw material and process control standards have been set.

Just how these product quality standards are set varies considerably. The buyer of your liner board may specify a mullen test, a caliper, a Taber stiffness and a certain Cobb value. A bond paper may have to satisfy a certain basis weight, brightness, TAPPI size and fold values. A glassine paper may have turpentine penetration, tear, porosity and burst values set up. A tissue product may have softness and tensile values to meet.

Setting the quality goals is a most important step. The object, of course, is to have these guides result in products which satisfy the consumers. It is fundamental, yet rather unique in the industry, to make products which satisfy the consumer rather than products which can be made most conveniently and most economically. On the other hand, it is imprudent to set goals which are not possible to attain, and good judgment must be exercised in this regard.

The establishment in a mill of new quality goals, which represent a marked change from the former operating levels, calls for team work on the part of the entire operating group. It is necessary to review furnish data, to make use of process data, and to educate all operating personnel thoroughly as to the problem. The changes may be so drastic as to necessitate engineering alterations; and, of course, the Engineering Department then should come into the picture.

The records which are kept carefully for each measured quality for each paper machine form data which prove invaluable as reference material to review the current operation. Also, you would be surprised how often a record of the performance of a machine a month ago, or even a year ago, may prove of value. For example: The record during the life of a special wire or felt, a press roll, a certain furnish, can be reviewed easily and accurately.

Shipping of Products

Up to this point, if we have gone to work on this testing, a steady flow of good products has resulted, and a lot of data has been accumulated. However, the important point is that we have produced paper or board of excellent quality.

Now, to preserve all this good work, it makes good sense to see that the quality is retained as the material flows to the markets. For some of you, this concern for the final product may not be too great a point since your output may be a liner board, a corrugating medium, a laminate, which in turn will be fabricated into a final consumer product. However, you know the waste which can result in a smashed edge of a large roll, or crushed flutes of a corrugated board or a puncture many thicknesses deep into the surface of a roll.

The program development for cartons, shipping containers, or whatever protective carrying medium you use, follows exactly the same lines we have followed up to this point.

From such a study, specifications for such items as cases, wrappers, tube board, end seals, etc., are set up by the Materials Control branch of Technical Control.

It is important to work with suppliers in considering these specifications. A cooperative effort always brings satisfactory results more quickly.

Many times an educational program is needed to insure a successful conclusion to your product's journey. Loading in railroad cars or ships, or warehouse practices may be improved by inspection of the practices and following through with recommended changes.

All the aforementioned checking and testing and collecting of data may sound like something very nice but not practical. However, at Scott Paper Company, we very firmly believe in the system and practice it religiously. And

we believe that it has been of great benefit. That it represents the answer 100 percent of the time is not true. Papermaking still retains some very stubborn and cantankerous streaks which strongly resist being tagged with a number or figure. It is true, though, that many problems are licked more quickly by application and use of the data.

So we daily perform the job of collecting data, of analyzing it and then taking action when the data indicate lack of control. This procedure is true if the case be a pulp with a low strength, a machine system off base or a packaging material which does not meet specifications.

It would be amiss to conclude without a word regarding the type of program just discussed. One should not become discouraged in the collection of technical control data. It is to be emphasized that the data become useful when values which are the exception result. The pattern is established by closely grouped data taken when the system or machine is running well. Practically the same data will result day after day when things are running smoothly. However, when values which differ from this pattern are obtained, then the source or point of abnormality can be found more quickly.

It is hoped that the few points just discussed about technical control will offer a different view to some of your problems, and that the ideas may prove of some value in your various operations.

Engineering and Industrial Experiment Station, University of Florida

C. E. WRIGHT
Jacksonville, Fla.

Training the men who guard, manage and replant the 22,000,000 acres of Florida's forest lands has been the job of the Florida School of Forestry since 1935, when it was established as a part of the College of Agriculture at Gainesville, Fla., by act of the State Legislature in response to public demand for forestry education.

It was not until 1937, however, that it was given the full status of a School of Forestry affording the B.S.F. degree to those who have completed four years of academic training, and a certificate of forestry to those students who have completed the one-year course (formerly two years) to qualify as forest foremen. The one-year Ranger School of the State Forestry School is located at Lake City.

Dr. H. S. Newins, director of the School of Forestry, and Edwin A. Ziegler, professor of forest management, take pride in the fact that the school has accomplished what it set out to do — supply the Florida Forest Service, the pulp and paper industry and other wood industries with qualified men to preserve, replant and develop Florida's enormous timber lands, as well as to utilize the timber, which covers about two-thirds of the State's land area.

This constitutes a task second only to that of Oregon, which ranks first in the United States in total forest land area. Unlike other States, where wooded areas have eventually been converted to farming, Florida must retain and replant her forest areas, as more than 60 percent of Florida's soil is not suited for agriculture.

The Florida School of Forestry is situated in the heart of the slash pine belt of the United States. "This school," says its director, Dr. Newins, "is the only educational organization in the world surrounded by slash pine on the north, south, east and west."

Figure 1. Dr. H. S. Newins, director Florida School of Forestry, who has headed the school since 1937 when it was officially started.

Moreover, the Florida school is the only one of its kind situated also in the midst of a naval stores industry. It is also surrounded by more wood industries of various types than any other forestry school in the country. In Gainesville or nearby are four sawmills, a large wood preserving plant, a stump distillation plant which produces 25 percent of the wood tar (used in tires and other rubber manufacture) consumed in the United States; a plant manufacturing wood crates for citrus fruits and vegetables; a pole yard; an excelsior mill, and a plant which converts Spanish moss, which grows so abundantly on Florida live oaks and other trees, into an upholstery material for such things as mattresses and horse collars. The Gainesville (Alachua County) area also ranks high in naval stores production, and students have the benefit of studying that phase of the pine-growing industry in the 70,000-acre tract owned by the Phifer Estate.

There is no pulp mill in Gainesville or in the immediate vicinity, but at Palatka, 45 miles away, there is the kraft paper plant of the Hudson Pulp & Paper Corp., while at Jacksonville, 75 miles, the pulp and paper plant of the National Container Corp. is near enough for students to make visits there in connection with their studies. About 100 miles away, at Fernandina, there is the mill of the Rayonnier Corp., the only plant in the United States making alpha-cellulose pulp for rayon from pine, other such plants using mostly spruce and hemlock. The plant of the Container Corp. of America, at Fernandina, is also visited.

For other field work, the school has right at its back door—only 12 miles away—the Austin Cary Memorial Forest of 2080 acres, which was donated to the university in 1939 by the Florida Board of Forestry for the teaching of forestry by practical demonstration. Classes are held in this forest every day. It includes a small nursery, where forest seedlings are grown, and a modern saw mill, which students are taught to operate.

Figure 2. Edwin A. Ziegler, professor of forest management at the Florida School of Forestry.

Figure 3. Eight pulp and paper mills have been established in Florida since 1930 such as this Southern Kraft Division plant of International Paper Co. at Panama City.

Figure 4. The Florida School of Forestry, though handicapped by lack of headquarters, has a small laboratory equipped with an experimental dry kiln for research and experimentation in seasoning of wood; also a pressure cylinder and equipment for demonstration and research in wood preservation.

Only about 60 miles away, at Welaka, on the St. John's River, is the Ocala National Forest of 2,000 acres, which is a Federal forest, leased on a long-term basis to the university to be devoted to conservation of wild life and forestry. The School of Forestry and the Department of Biology take students there for research and for training in propagating, preserving and management of wild life. This forest abounds in quail, wild turkey, deer and other bird and animal life and has made possible the establishment of a new course at the School of Forestry in game and wild life management.

Another forest within easy reach of the school, lying in Southern Georgia just over the State line above Lake City, Fla., is the 208,000 acres of pine land recently leased for 63 years by the St. Regis Paper Co., with a mill at Pensacola. This and the Ocala and Osceola divisions of the Florida National Forest are available for field work by the Florida students and their professors.

Field trips constitute an important part of the school's curriculum. Two busses, one seating 25 and the other 40, are used for this purpose.

Florida differs from many other States in that the north supports a temperate zone flora, while the south has a tropical flora. As graduates may serve in any part of the State, it becomes necessary for students to study the southern area, including the Florida Keys, before graduation. The number of forest trees native to the State far exceeds those of any other State. In the southern belt the coco palm and the Florida mahogany presents a different landscape from that of the northern pine belt. The School of Forestry has projected a Department of Tropical Forestry and expects to establish an experimental area in the southern part of the State.

One of the interesting sights on these southern trips is the bulk of the last remaining virgin cypress, located in Seminole County, in the central part of the State. The Senator Cypress, most majestic of these trees, is estimated to be 3500 years old and stands 127 feet high with a diameter of 17½ feet. One must walk about 50 feet to circle it at its base.

In its laboratory the Florida School of Forestry has a Moore dry kiln, made in Jacksonville expressly for this work; a pilot-size cylinder for pressure treating poles, posts and timbers; open tanks for covering all phases of lumber seasoning and wood preservation. Its outdoor equipment includes a tractor and fire line plow, and it cooperates with local units of the State and U. S. forest administrations in the use of their pressure pump trucks and a network of fire towers.

While somewhat handicapped by lack of adequate space and looking longingly at magnificent buildings that have been erected in recent years at the University of California, Oregon State College, Pennsylvania State College and other forestry schools, the staff of the Florida School of Forestry has carried on its work well enough to provide Florida's wood industries with the technically-trained men needed for the preservation and rehabilitation of the State's forests. An adequate new building is in the planning stage.

Headed by men who have had a

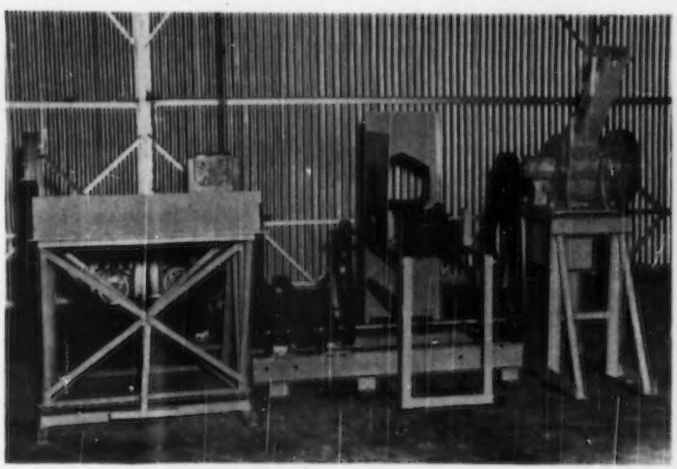


Figure 5. Chip Preparation Equipment

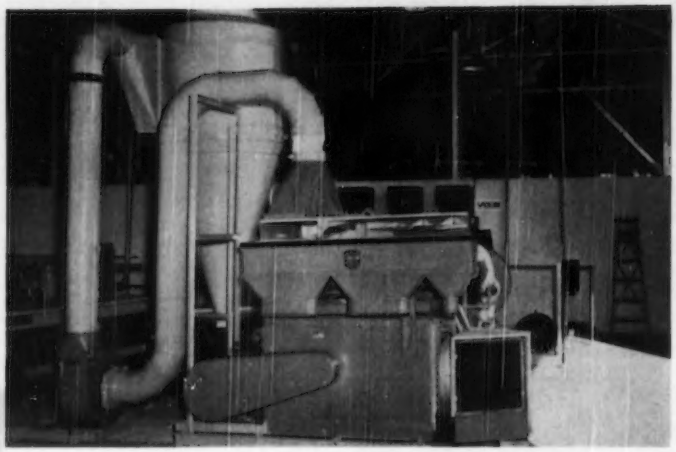


Figure 6. Sutton, Steel and Steele Air-Flotation Table.

vast experience in timber culture and management of forests, the staff has had wide influence in making Florida more conscious of the economic importance of its woodlands. Dr. Newins, director of the school since its beginning, was previously a forestry teacher at Michigan State Agricultural College, Penn State Agricultural College and Oregon State Agricultural College. Prof. Ziegler was for 20 years head of the Penn State Forestry School. From 1929 to 1932 he was senior forest economist with the United States Forest Service at New Orleans, and from 1932 until he joined the Florida school in 1937 he was head of forestry research for the Pennsylvania State Department of Forests and Waters.

J. Hillis Miller, president of the University of Florida, has frequently made appeals to the Florida public for support of the program of the School of Forestry, as when he said recently:

"Florida has the rapid growing tree species, the rainfall, the long growing season, and the absolute forest soil in such abundance that, with fire protection and trained management, the State can grow over six times its present output.

"It is a tragedy that the State has not recognized the possibilities in this, its greatest undeveloped natural material resource, and taken up forest education and forest research on the scale that Florida's future economic welfare demands. The water interests and the fish and game interests have a great stake in the basic effort to reforest the State. The great recreation patronage of the State will respond likewise to this movement."

Florida cuts 1,200,000 cords of pine pulpwood annually and supports eight pulp and paper mills, all built since 1930. "With proper forest protection (rapidly being developed by the State Forest Service under State Forester C. H. Coulter) and better forest management," says Dr. Newins, "the State could support many more wood-using industries."

The fact that pulp companies make $100 worth of pulp, and up to $160 worth of paper, from less than two cords of small-sized rough pine, while lumber mills require much larger timber and produce a considerably smaller product value from the same quantity of standing pine, points to the technical progress that has been made in the newest and most rapidly expanding field in wood utilization—the pulp and paper industry. Both the School of Forestry and the College of Engineering of the university are offering assistance in this field. A description of the work and equipment of the Engineering and Industrial Experiment Station of the College of Engineering follows.

The Pulp and Paper Laboratory at the University of Florida is a part of the Chemical Engineering Department of the College of Engineering. Its research activities are carried out through the Engineering and Industrial Experiment Station, a branch of the College of Engineering. It is the headquarters for all research and instructional work in the field of pulp and paper.

The research staff of the laboratory is made up of both full-time and part-time employes. The full-time staff consists of four professionally trained men: Dr. W. F. Brown, Dr. W. J. Nolan, R. L. Harvin and C. W. Rothrock, and technicians. The part-time staff consists of undergraduate student assistants employed hourly and graduate students who are carrying out their research in the field of pulp and paper. Two candidates for Ph.D. degrees are doing their thesis work on fundamental studies of sulfate pulping. Thus far two master's theses have been completed in the pulping field. These are "Sulfate Pulping of Scrub Oak under Mill Conditions" by George B. Hills, Jr., and "A Study of Pulping Reaction Between Scrub Oak and Solutions of Sodium Hydroxide and Sodium Sulfide" by Leonard M. Reeder.

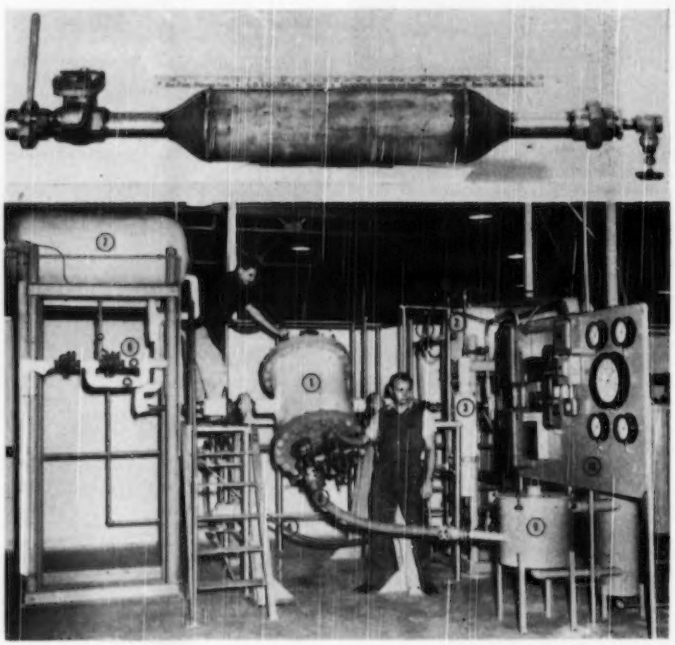
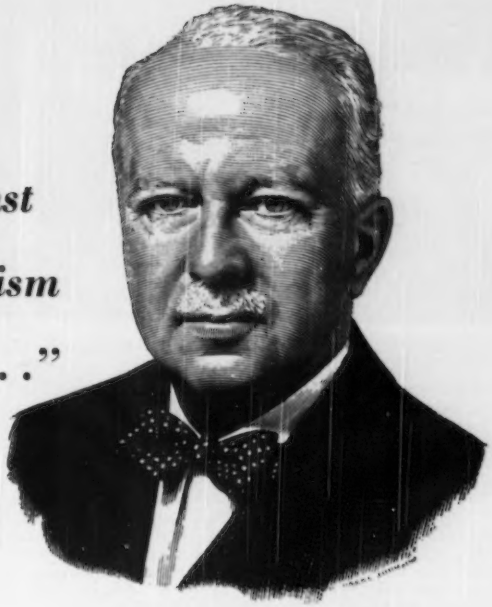


Figure 7. (Above) Single Digester. Figure 8 (Below) Cooking Equipment

"The immunizer against the disease of communism is a certain feeling . . ."



MR. WALTER S. GIFFORD

"It is the feeling of a man who owns a home, a bank account, an insurance policy. *It is the feeling that an employee on the Payroll Savings Plan has when he gazes at his accumulation of Savings Bonds and realizes that here is palpable evidence that he has made a profit on his job—that the profit system works for him as well as for his employer."*

Mr. Gifford has believed in—and worked for—payroll savings plans for thirty-seven years—since 1913, when, as Statistician of the A. T. & T., Mr. Gifford developed a payroll savings plan for the purchase of A. T. & T. stock.

In 1938, A. T. & T. employees were offered a Payroll Savings Plan for the purchase of U. S. Savings Bonds. To date, Bell System employees have invested ***more than half a billion*** dollars in savings bonds—with a maturity value in excess of $675,000,000.

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Every Payroll Savings Plan is a reflection of the vision and enthusiasm of the top executive of the company. If he gets behind it, ***personally,*** employee participation is high—to the benefit of the country, the company and the employee. If the interest of the Big Boss is active—participation may very well exceed the 50% mark. The top man is the key man in a Payroll Savings Plan.

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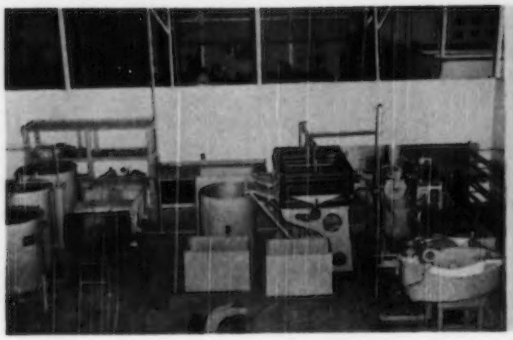

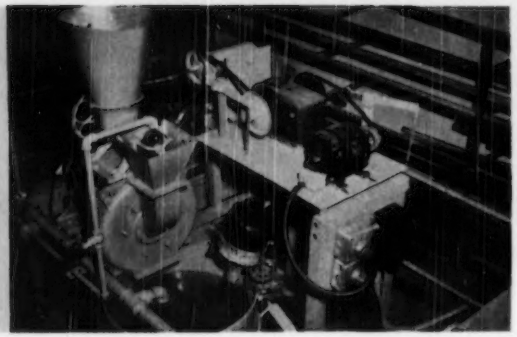

Figure 9. (Left) Boiler. Figure 10. (Right) Sheet Formation Equipment.

From a research standpoint, the present objectives of the laboratory are three-fold. (1) To assist in the development of the southern paper industry along existing lines, (2) to investigate the possibilities of utilizing more of the hardwoods, and (3) to study methods for improvement of pulping processes. In the first of these objectives, the laboratory is equipped to assist the mills in any of their pulping problems. With small-scale pulping equipment it is possible to study the effect of changes in any of the mill variables on quality and yield of pulp so that the mill could make desired changes without endangering the continuity of production.

In the second of these objectives, a great deal of work has already been done under the direction of Dr. Nolan on the utilization of the huge stands of scrub oak in the South, which have heretofore been considered worthless from the papermakers' point of view. In the State of Florida alone it is estimated that there are 5,000 square miles of scrub oak, or about half of its standing timber in the State. No commercial use has yet been made for this so-called wastewood other than as firewood, though during World War II it was proposed to use the bark for the extraction of tannin. Since for every ton of bark there are three to four tons of wood, the twelve percent of usable tannin in this bark cannot be recovered economically unless the wood can be marketed. It was this economic problem which impelled the pulp and paper specialists at the university to probe into the possibilities of using the wood for paper manufacturing.

It has been discovered that the oak wood can be pulped by the kraft method, realizing a 47 percent yield of short-fibered, easy bleach pulp. The chemical requirements are slightly less than for pine pulps. On an experimental basis, papers have been produced using 60 percent of this short-fibered pulp to 40 percent bleached pine which indicates that book and bond papers can be produced from this so-called waste material. The laboratory states that "economically these pulps should compete favorably with any comparable pulps on the market."

One great deterrent to the use of the hardwoods has been the difficulty in separation of the bark from the wood. This problem has been under study for some time and several methods of separation have been tried. Preliminary tests show that the machine most adaptable for separation of bark from wood on a commercial scale is the Air Flotation Table made by Sutton, Steele and Steele, Inc., of Dallas, Texas. Intensive work is now in progress to determine capacities and efficiency of separation.

Pointing to the rapid development in the manufacture of kraft paper in the South, the Pulp and Paper Laboratory states: "There is no apparent reason why manufacturers of high quality white papers using Southern woods should not experience the same healthy growth and economic soundness as was experienced by the producers of high-strength kraft pulps during the past twenty years. The Southern hardwoods have the same growth rate advantage over Northern hardwoods as Southern pine has over Northern pine and spruce. The important factors of labor, climate and fuel are favorable for hardwood pulping, just as they are in the production of kraft pulp."

The fact that Southern pine is developing along the lines of newsprint manufacture leads the laboratory staff to believe that many of the hardwoods, such as the gums, poplars and possibly Australian pine, may eventually be utilized as a source of ground wood for newsprint. Another new use of the hardwoods in the South is opening up at the Natchez, Mississippi, mill of the International Paper Co. where dissolving pulps are to be produced from hardwoods by the sulfate process. "These recent developments," says Dr. Brown, "indicate a trend toward diversification of pulp mill products in the South and a corresponding expansion of the industry."

Another project on which the laboratory is working is in the field of wood waste utilization. Mr. Harvin is in charge of this work. Slabs, edgings and sawdust are in abundant supply from sawmills and are receiving increased scientific study for the purpose of converting these materials into salable products instead of burning them. Efforts are being made to find economic uses for these materials, such as fibre board, core board, synthetic wood and dissolving pulps.

Waste by-products of the industry are also being investigated with a view to their commercial utilization. For example, a good quality, low-cost varnish has been developed from tall oil, the rosin soap skimmings from kraft black liquor. The fatty acids, sterols and rosin acids are being separated and studied for the purpose of developing other salable by-products.

In the third objective of the laboratory, that of studies toward improvement of pulping process, work is being concentrated at present on continuous pulping. Thus far continuous pulpers have been used for production of board and other materials where thorough fibre purification is not essential. Attempts are being made by the staff to produce a bleachable pulp continuously. Economic considerations demand that the pulping cycle not exceed thirty minutes if continuous pulping is to be successful. The nature of these pulpers makes possible the pulping of sawdust and other materials which cannot otherwise be handled except in rotary cylinder or globe digesters. It is hoped that conditions may be worked out whereby dissolving, easy bleaching, and semichemical pulps may be satisfactorily produced in continuous pulping equipment.

The laboratory occupies 5,000 sq. ft. of floor space and houses about $100,000 worth of equipment. It is possible for the laboratory to produce sufficient pulp for any pulping conditions, to determine the effects of changes of the pulping variables on the physical strength and bleachability of the resultant pulps. Equipment is available for the production of building board and a well-equipped chemical laboratory provides chemical analysis of pulps, cooking liquors and other materials.

A brand new feature of the Pulp and Paper Laboratory's program is a training course of one year for young employes of paper companies who have

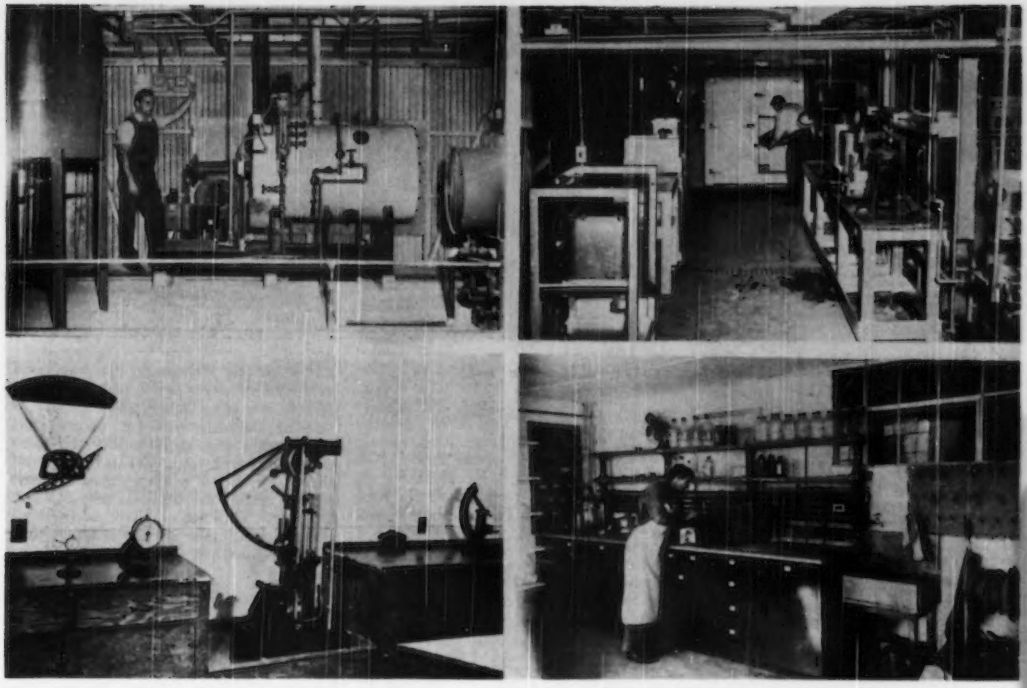

Figure 11. (Upper Left) Partial View of Constant Temperature—Humidity Room. Figure 12. (Upper Right) Analytic Chemical Laboratory. Figure 13. (Lower Left General View of the Laboratory. Figure 14. (Lower Right) Close-up of Sprout-Waldron Attrition Mill.

not had collegiate training. Paper mills, including those outside Florida, may send men with high school education and some plant experience who show outstanding promise for future advancement. These students remain on the employer's payroll for the length of the course. The sponsors receive quarterly reports on their progress.

While at the university each man is encouraged to enroll in a three-hour course each semester at the university, in such subjects as chemistry or mathematics. Each student will receive training during the year in wood handling, experimental pulping, strength development, physical testing, bleaching and chemical analysis of pulps. All of these processes, while routine in themselves, will be part of a broad research project so that the student can correlate the interrelationship of all the processes in achieving the final results.

"It is hoped that this training program will result in a more thorough understanding of the interdependence of each operation in pulp manufacture," says a brief prospectus of this course. "Even though each man later specializes in one particular operation, he is more likely to see how a slight change in his operation might effect the whole mill. The year's exposure to research methods should help avoid development of the reactionary attitude so common in the paper industry."

In the field of formal education, the laboratory, as a part of the Chemical Engineering Department under the direction of Dr. W. H. Beisler, offers graduate training to those students interested in pulp and paper. The master's and doctor's degrees offered are in chemical engineering, but the graduate student may elect to direct his thesis investigation into the field of pulp and paper. As was mentioned earlier, a number of students have already taken advantage of this opportunity.

The staff of the laboratory feels that there is a definite need for a well-coordinated plan of pulping research in the South. As they express it, "If the South is to realize the full economic benefits from its unusual potential in the field of pulp and paper, a centralized research organization must be set up where the talents of the chemist, chemical engineer, mechanical engineer, and electrical engineer may be used at minimum cost. This system would be advantageous from the point of view of personal efficiency and it avoids duplication of extensive equipment and possible duplication of effort on the same problem."

Equipment in the Pulp and Paper Laboratory

The laboratory equipment can best be described by the accompanying illustrations. The order of description will follow, as nearly as possible, the chronological order of the processing, from the freshly cut logs to the final evaluation of pulp test sheet for strength and bleachability.

Chip Preparation Equipment: The chip preparation equipment is shown in *Figure 5*. In the center of the photograph is a chain debarker for removing bark from the logs, five feet long. It consists of four chains loosely suspended between two steel discs, which rotate at 1,350 rpm. The bark is removed by the flailing action of the chains as the log, resting on rollers, is passed back and forth over them. This method of debarking is used because the quantity of wood used for pulping experiments is too small to warrant the use of the air-flotation table to be described later.

At the left in the illustration is a circular cutoff saw, used to cut the logs into lengths which can be handled by the chipper. The chipper, shown at the right, is a Mitts & Merrill No. 0 brush hog. The feed spout of this hog will accept only those pieces of wood 4" or less in diameter. For that reason the wood sections are split so they will pass through the spout. All three units are driven by a 10 h.p. motor shown in the background. The drive belts on each unit may be loosened by means of idler pulleys so that any unit may be operated independently of the others.

The chips produced by the brush hog are considerably smaller than those produced by a pulp mill chipper. When-

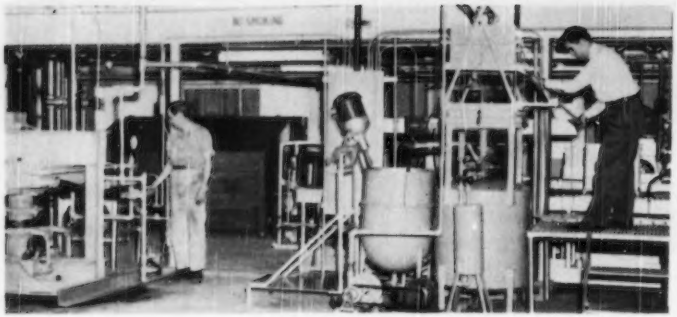

Figure 15. Close-up of Board Forming Mold and Hydraulic Press.

ever mill size chips are needed the barked logs may be taken to one of the neighboring mills and chipped by the standard method. The chips are passed over a Day Ro-ball No. 32 screen (not shown) equipped with one ¾ mesh and four mesh screens. The accepted chips consist of that fraction passing through the one ¾ mesh screen and retained on the four mesh screen.

The accepted chips are dried in the lumber kiln (not shown) of the School of Forestry to approximately air dry condition. The chips are stored in a large, well ventilated bin until used. As they are needed for pulping, sufficient chips are dried to an oven dry condition in a tray drier. The day before the chips are to used, the required quantity for each cook is weighed and stored separately in air-tight containers.

A Sutton, Steele and Steele air-flotation table, Mod. BX100, is shown in *Figure 6*. This unit is used for the separation of bark from oak wood by a method developed at the Engineering and Industrial Experiment Station of the University of Florida. Logs, with bark on, are chipped by standard chipping procedure. The shock of the chipper knives separates bark from wood and this mixture is fed to the air-flotation table for gravity separation. The table operates on the same principle as is used by the Wilfley table in the mineral industry for the separation of ores of different specific gravities. An air stream passing up through the bed tends to float the chips and the vibration of the table imparts forward momentum to them. In addition to this motion, which is controlled by the longitudinal pitch of the table, the chips receive a transverse motion, depending on the amount of transverse tilt applied to the table. The result is that the lighter fraction is discharged at the feed end of the table and the heavier fraction drops off at the far end. The intermediate fraction, a mixture of bark and wood, is sent back to the feed hopper and repassed over the table. The capacity of this unit is 3000 lbs. of feed per hour. It is this method of removal of bark from wood which will be investigated for application to all southern hardwoods.

Pulping Equipment: The pulp digestion equipment which is illustrated in *Figures 7* and *8*, includes seven small digesters placed together in a single housing. One of the seven digesters is shown in *Figure 7*. The main body consists of a 6 in. diameter pipe section reduced by means of bell reducers to 2 in. pipe at each end. This digester has a capacity of ½ cu. ft. At the left end is a 2 in. quick opening gate valve, used as a blow valve. At the right end is a 2 in. union used for charging chips and cold cooking liquor. The 2 in. union is reduced to ¾ in. to allow the use of the ¾ in. gate valve shown at the extreme right. This valve is used for relief, liquor sampling and charging hot cooking liquor when pulping is being done at constant temperature. The reducing bushing houses a screen which prevents chips entering the ¾ in. valve during relief or liquor sampling. Stainless steel (#316) is used throughout.

Figure 8 shows the complete assembly of the pulping apparatus with the equipment in position ready to blow a digester. Each unit of the assembly is designated by numerals.

The digester housing (1) is a 24 in. diameter section of steel pipe, flanged at both ends. Through the blind flanges bolted to the pipe flanges at both ends the 2 in. diameter sections of the seven digesters protrude. Six of the digesters are arranged in a circle concentric to the housing, the seventh unit being at the center of the housing. At the point of emergence of each digester a steam-tight packing gland is used. The digesters are heated indirectly by admitting steam to the digester housing regulated to the required pressure by pressure regulating valves (6), by means of a 1 in. hole drilled through the left hand trunnion (3 in. diameter) of the housing. Condensate leaves the housing by means of a ½ in. hole drilled through the right hand trunnion, where it is passed back, through a steam trap, to the boiler. The digester housing rotates on its trunnions at 3 RPM to insure thorough mixing of wood and cooking liquor.

The liquor tank, used when constant temperature pulping is being studied is shown at (2). This tank is electrically heated and is kept at a pressure approximately 10 psi higher than cooking pressure. A calibrated measuring tank (3), also electrically heated is connected to the liquor tank so that continuous circulation can be maintained between the two tanks. The gauge glasses for measuring liquor level in the measuring tank can be seen faintly in the photographs. A ¾ in. flexible steel pipe (4) connects the measuring tank to any digester at the end fitted with the ¾ in. gate valve. The flexible steel line (5) connecting any digester to one of the pressure gages on panel board (10) has been removed in favor of a pressure gage which can be attached directly to any one of the digesters for observation of pressure conditions in that digester. A wash water tank (7) is heated by direct steam to a pressure 10-15 psi higher than that used in the digester housing. This wash water is used to clean the digester after it is blown and to partially wash the pulp in the blow-pit (9).

The position for blowing, or discharging, a cook is shown in *Figure 8*. After a sample of the cooking liquor has been obtained 2½ min. before the end of the cook, the digester housing is stopped in the position shown. The blow line (8) is connected to the 2 in. blow valve of the digester to be discharged.

The digester is blown by a quarter turn of the 2 in. gate valve, into the blow pit. Full digester pressure is used, no attempt being made to reduce the cooking pressure before the cook is blown. The blown pulp is washed from the blow pit into canvas bags where the black liquor is completely removed by washing with hot water. The pulp is next pressed to approximately 50 percent moisture and is stored in air-tight containers for further processing.

The Cleaver-Brooks boiler shown in *Figure 9* is used for generation of high pressure steam used in pulping. This unit develops 15 boiler horsepower at a pressure of 200 psi gage.

Sheet Preparation from Pulps: The main items of equipment used in developing pulps for physical test are shown in *Figure 10*. In the extreme lower right hand corner of the photograph can be seen part of the 1½ lb. Niagara beater used to develop hydration in the pulp. Next to it is a Canadian Standard freeness tester which indicates the degree of hydration. On the right hand table is a small gas-fired digester used for small-scale exploratory cooks. Farther down on the table are a rectangular sheet mold and a Valley cylindrical sheet mold which produces test sheets 7¼ in. in diameter. In the background is a large drier used for drying chips and wall board samples. Test sheets are never dried in this unit as they are air-dried

on stainless steel plates between aluminum drying rings.

In the left foreground is a Bauer-McNitt classifier in which the pulp samples may be subdivided into their various fibre lengths. Behind the classifier is a single plate flat screen used in determining the amount of screenings or oversize particles in each batch of pulp.

Physical and Chemical Testing of Pulps: Physical testing of handsheets prepared on the Valley cylindrical sheet mold is carried out in the constant temperature-humidity room shown partically in *Figure 11*. This room is kept at 50 percent relative humidity and 73° F so that paper sheets may be tested under uniform conditions. Equipment used in these tests consists of thickness gauge, basis weight scales, tensile strength tester, tearing strength tester, bursting strength tester and a tester for determining strength in double folds. In addition, a G.E. Brightness tester is used in this room to evaluate the brightness of pulps which have been bleached experimentally.

A photograph of the chemical testing laboratory is shown in *Figure 12*. Here, analyses of cooking liquor and waste cooking liquor are made. Lignin, total cellulose and alpha cellulose contents of pulps are determined here. Bleach liquor analysis, permanganate number, and all other analyses required in complete pulping studies are carried out in this room.

Formation of Wall Board and Wood Substitute: A general view of the laboratory, beyond the chemical pulping equipment, may be seen in *Figure 13*. At the far right is a 12-in. Sprout-Waldron attrition mill used for defibering semi-chemical pulps and other materials used in board formation. Directly in front of the mill is a 10 lb. Noble and Wood cycle beater. Here commercial power requirements for developing hydration in pulps may be determined. To the left of the mill is a 4 plate flat screen which is used when large batches of pulps are passed through the attrition mill. At the far left in the photograph are a zeolite water softener, storage tanks for process water, etc., and drums used for storing cooking liquor.

A close-up of the attrition mill mentioned in the preceding paragraph is shown in *Figure 14*. The speed of the screw mechanism feeding raw material into the mill hopper is controlled by the variable speed drive at the right. The rate of water flow into the mill hopper is controlled by an orifice plate in the water line and a manometer which may be seen at the extreme left. The tank and agitator in the foreground receives, dilutes and mixes the pulp as it comes from the mill and from there it is pumped directly to the flat screen where oversize fibres are removed.

The board forming mold, shown in *Figure 15*, is used for producing wall board and wood substitute from semi-chemical pulps and wood wastes. Sheets 20 in. x 26 in. and 1 in. thick may be produced on this equipment. Plastics and other binding materials may be added while the board is being formed. At the left of the photograph is a hydraulic press used in conjunction with the board former. It has platens 36 in. x. 36 in. which are piped for either steam or cooling water.

Our Industry and its Depreciation

BERNARD A. CHANDLER*

Are you satisfied with your system of depreciation accounting? Is it the best you can have to carry you through many coming years of high taxes? What is your reserve ratio and what has it to do with your future allowances for depreciation? Are your net plant accounts less than they should be because you have written out depreciation faster than it actually took place? These are very real questions which need real answers.

Good accounting should record what actually happens in the trade or business. Most business men and accountants will accept that statement. Nevertheless, many systems of depreciation accounting which are in common use do not record actual retirements and use depreciation rates which have no relationship to the actual retirement experience of the company. Furthermore, after using these systems for several years plant accounts do not show the cost of the plant actually in service.

Not too long ago a conference was held with the comptroller of a company which had a ninety percent depreciation reserve ratio. As the conference progressed it was learned that purchases of new equipment had been capitalized but retired equipment had not been written out of the plant and reserve accounts. The plant accounts and reserves were both overstated by the original cost of the many machines which had been retired over the years. In this case the following program seemed to be the best solution:

1. To set up new plant accounts for all purchases and to compute composite rate depreciation on these accounts.

2. To credit all retirements of old equipment to the old plant accounts at as near original cost as could be determined and to make corresponding charges to the old reserve accounts.

3. To gradually, as time permitted, inventory all equipment which was to remain in the plant for several years. The original cost and accrued reserve for each unit or group of units was to be determined as accurately as possible. When the purchase records of these items could not be found in the old ledgers or journals old catalogues were to be used. Men from the accounting department who knew the plant and the old records were to be assigned to this work as their between-rush-periods job.

4. To transfer the base and reserve for each unit or group of units to the new plant accounts.

5. To transfer to surplus the remaining balances in the old plant and reserve accounts after all the old plant had either been retired or transfered to the new accounts.

This procedure will develop for this company plant accounts which will show the cost of the plant in service at all times. It will develop reserve accounts which will show the amount of depreciation accrued on the plant in service and it will develop retirement data from its own plant which can be analyzed. These are important and result from recording purchases, sales, retirements and actual depreciation.

Someone may ask why single item accounts were not recommended in this case. There are very few situations where single item accounts are justified and a big pulp and paper mill is not one of them. Under Income Tax Regulations single item accounts do not make retirement losses deductable unless maximum life rates are also used. It has never seemed to the writer that the increased cost of computing depreciation by single items was justified by the data obtained. Since the only way we have of determining rates is by finding the average life of many units there seems to be no way of determining a correct single item rate.

The program outlined in the case cited above would be indicated only when the base and reserve are overstated by retirements which have not been written off on the books and when the items in the present plant which are to be retained for many years are relatively few in number and can be identified. Other companies will have other problems which will have to be met by other procedures. After the base and reserve have been determined the objectives which should be kept in mind are, first, plant accounts in which purchases are so recorded that retirements can be identi-

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fied and retired at cost and, second, retirement records so kept that retirements can be analyzed for the determination of rates. Every company should find the cheapest, quickest, and most accurate way of solving its own problem.

The President tells us we are in a period of belt tightening. Taxes will be higher and higher. The supply of materials will be shorter and shorter. Those of us who have written off depreciation faster than it actually accrued may find ourselves with higher taxes and depreciation allowances which are smaller each year. It is about time we put our accounts in order so they will tell us the truth about our business and guide us in our management policies.

SUPPLIERS

Aluminum Co. of America announces that it has volunteered a general wage increase of 10 percent on present basic wage rates for its hourly-paid employes, to take effect first payroll week in October, upon acceptance by the various unions. Appropriate increases for salaried employes will be made.

It was pointed out that this voluntary 10 percent increase was offered despite the fact that the wage reopening dates of ALCOA's agreements with the various unions representing employes at the company's plants have not yet been reached.

Great Lakes Paper Co., Ltd. has declared a dividend of 40c per share on common stock and another dividend of 62½c on Class "A" preferred stock, both payable September 30 to stockholders of record Sept. 9.

Heyden Chemical Corp. and *Arvey Corp.* announced in a joint statement last week the sale of Heyden's Memphis, Tenn., plant to Arvey. Prior to the sale, the plant produced liquid caustic soda and chlorine. Future use for the plant was not disclosed.

Johnston Pump Co., Los Angeles, Calif., has announced that, at the last board of directors meeting, Kenneth G. Lundie was elected vice-president in charge of sales, and Perry Brown was elected vice-president in charge of engineering, effective September 1, 1950. Brown has been chief engineer at Johnston, and Lundie has been sales manager. Both men have been in the vertical turbine pump industry for many years.

United States Rubber Co. has appointed Henry A. Rome as manager of special products sales. Mr. Rome will supervise sales of lathe and wrapped goods, extrusions, hand made rubber tubing, Uskon conductive rubber, industrial products and specialties made of Enrup, the company's new thermosetting plastic.

HOMER T. YARYAN

The Plaskon Division of Libbey-Owens-Ford Glass Co. is moving its Greensboro, N. C., office to 490 West Harper street, Lenoir, N. C., effective September 1. Homer T. Yaryan, sales representative, will continue to handle all glue and industrial resin accounts in the states of Virginia, North Carolina, and South Carolina.

Moisture Register Co., of Alhambra, Calif., manufacturer of electronic instruments for testing moisture content, is now established in new and larger quarters at 1510 West Chestnut street, Alhambra.

Nopco Chemical Co., Harrison, N.J., is now using polyethylene bags to line its regular, open-head steel drums used in shipping defoamers and various other chemicals to pulp and paper mills.

This new type liner is said to have a number of advantages. It is considerably taller than the drum so that it may be drawn up and out over the top of the drum until it extends almost 10 inches down the outside. The lining remains in this position without any difficulty while the contents are being removed, yet the cover can be replaced as often as desired to prevent dirt from contaminating the unused portion of the product. Likewise, air can be excluded from the product by putting the polyethylene bag back into the drum and twisting the loose section tightly together. This permits the user to set the drum aside for short intervals when the material is not needed. Less waste is also incurred with the liner for it can easily be removed and literally "squeezed dry" to allow the benefit of the last ounce of material.

Another appealing use for the polyethylene bags has recently been reported by mill personnel. When thoroughly washed out, the liners are said to make splendid makeshift raincoats and fishing bags.

Pennsylvania Salt Manufacturing Co. has appointed George D. Grogan and Donald Macfarlan, Jr., as district sales managers in Chicago and Detroit, respectively, for the heavy chemicals department.

Mr. Grogan formerly was a product supervisor in the Philadelphia office and Mr. Macfarlan formerly was a sales representative in the Paterson, N. J., office. H. G. Potts, formerly district sales manager in Detroit, has been named supervisor of technical service for the midwest areas. H. A. Smith, formerly district manager in Chicago, has been given special assignments in the heavy chemical field in the Chicago area.

L. H. Brandt, formerly manager of technical service, has been appointed product supervisor in the Philadelphia

Riverside Metal Co., Riverside, N. J., will feature a new movie and a wire test demonstration at its booth at the convention of National Metal Congress & Exposition, Chicago, October 23-27. The movie, to be shown for the first time at the Metal Show, follows the production of phosphor bronze, nickel silver, cupro nickel, and beryllium copper alloys, from initial casting all the way through final inspection and shipping.

Titanium Pigment Corp., subsidiary of National Lead Co., announced the election of Graham W. Corddry as vice-president in charge of sales.

K. W. Ericson, formerly western sales manager of the corporation, has been appointed general sales manager, succeeding Mr. Corddry.

H. L. Jungmann will continue as assistant to the general sales manager.

John A. Lutz, formerly manager of the technical service department, has been appointed eastern sales manager, succeeding W. H. Woods. Mr. Woods succeeds Mr. Ericson as western sales manager, with headquarters in Chicago.

James MacGuffie has been appointed manager of the technical service department of the Titanium Pigment Corp., with headquarters in New York City.

HEMPHILL TO CONDUCT PACKING CLINIC

J. W. Hemphill, manager of the Pulp and Paper Industry Div., Johns-Manville Corp., New York, is to stage a packing clinic at the November 16, 1950, meeting of the Michigan Division of The American Pulp and Paper Mill Superintendents Assn.

CANADA'S CHLORINE SITUATION

OTTAWA — Scheduled increase in price of chlorine, in addition to a tight supply situation, is expected to affect costs of pulp and paper operations in Canada. Already it is said that chlorine is being supplied on a voluntary allocation basis.

MANDO INSTALLS ECONOMIZERS

Minnesota & Ontario Paper Co., International Falls, has placed a large order with Ross Engineering for complete revamping of the heating and ventilating system and the installation of Ross-Briner Economizers on No. 3 and No. 4 machines.

CANADIAN P&P STOCKS ADVANCE

OTTAWA—Following in the wake of the stock split proposed by Price Bros. & Co., Ltd., carrying the price of the company's shares to their highest levels since 1929, shares of other Canadian pulp and paper stocks on the Montreal and Toronto exchanges moved up to higher levels and attracted investors' attention to a considerable extent.

Price Bros. & Co., Ltd.'s stock soared upwards after it became known that it intended to issue four new shares for each share now issued, and though other pulp and paper stocks started slowly upon this information, yet large gains came soon afterwards. Among the stocks which advanced upon this development were Abitibi Power & Paper Co., Ltd., British Columbia Pulp & Paper Co., Ltd., Brown Corp., Consolidated Paper Corp., Ltd., The E. B. Eddy Co., Ltd., Great Lakes Paper Co., Ltd., The Ontario-Minnesota Pulp & Paper Co., Ltd., Powell River Co., Ltd., and others.

CANADIAN SECURITY PRICES

OTTAWA — Security prices of pulp and paper stocks were 330.4 in July, 1950, compared with 361.4 in June, down 31 points as against 221.4 in July, 1949; up 109 points, on the base of 1935-39 being 100, Canadian Government reports.

CANADA INCREASES CORPORATION TAXES

OTTAWA—With only a 5 percent increase in corporation taxes announced by the Canadian Government, it is not expected that the Canadian pulp and paper companies will be hard hit in 1950 by taxes in face of the Canadian Government's huge increase in spending for defense purposes this year. Earlier it had been feared that such taxes would be much higher, including the reimposition of the excess profits tax. Earnings per common share will, as a result, not be affected much by the new tax imposition.

Chesapeake Corp. of Virginia at West Point have declared a stock dividend of 25 percent on the issued and outstanding capital stock of the corporation. The dividend will be payable October 20 to stockholders of record at the close of business October 10. The board also declared a cash dividend of 50 cents per share on the outstanding capital stock of the corporation, payable November 15 to stockholders of record at the close of business November 4.

Rayonier Incorporated has declared a regular dividend of 50c per share and an extra dividend of 25c per share on the common stock, both payable November 15, 1950, to stockholders of record October 27, 1950. It is understood that the extra dividend was possible as a result of action by the company's long-term noteholders in revising one of the note restrictions to permit maximum annual dividends, on both classes of stock, of $5,500,000 instead of the previous figure of $3,500,000.

Minnesota and Ontario Paper Co. has declared a quarterly common stock dividend of thirty-seven and one-half cents per share and an extra dividend of twenty-five cents per share for the year 1950 payable to stockholders of record at the close of business on September 29, 1950, both payable on October 25, 1950.

The Lake St. John Power & Paper Co., Ltd., has given notice of redemption to holders of first mortgage sinking fund bonds, series "B," 3½ percent, secured by trust deed of hypothec mortgage and pledge, bearing the formal date February 1, 1927, and supplemental trust deed bearing formal date July 1, 1936, and supplemental indenture having formal date June 1, 1948, in favor of National Trust Co., Ltd., trustee.

FINANCIAL RECORD

PREFERRED STOCKS	Per Share Earnings: Calendar Year 1949	Per Share Earnings: 12 Mo. to Approx. 6/30/50	Indic. Annual Divid. Rate	Sept. 27 Approx. Market Price
Armstrong Cork Co. $3.75 Cum.	$40.95*	$48.14	$3.75	$101¾
Armstrong Cork Co. $4.00 Cum. Conv.	40.95*	48.14	4.00	115¾
Celotex Corp. 5% Cum.	6.80c	8.75	1.00	16½
Champion Paper & Fibre $4.50 Cum.	60.09f	89.39	4.50	104½
Container Corp. of Amer. 4% Cum.	89.52	104.60	4.00	103½
Crown Zellerbach $4.00 Cum.	54.38c	61.85	4.20	122½
Dixie Cup Co. $2.50 Cum. Conv. Cl. A	10.93	12.24	2.50	53
Flintkote Co. $4 Cum.	62.70	71.81	4.00	105¾
Robert Gair Co., Inc. 6% Cum.	13.79†	15.86†	1.20	18½
International Paper Co. $4 Cum.	224.55	264.19	4.00	106½
Kimberly Clark Corp. 4% Cum.	85.27	117.03i	4.50	106
MacAndrews & Forbes 6% Cum.	61.59	62.97	6.00	143½
Mead Corp. 4¼% Cum.	51.37	82.87a	4.25	91½
Mead Corp. 2% Cum. Conv. 2nd	21.35*	27.76a	2.00	53¾
Paraffine Cos. Inc. 4% Cum. Conv.	56.46	59.81	4.00	98½
Rayonier Inc. $2 Cum.	9.54	12.09	2.00	34¼
St. Regis Paper Co. 4.40% 1st A	30.74	36.61	4.40	95¾
Scott Paper Co. $3.40 Cum.	51.15*	62.16*	3.40	100¼
Scott Paper Co. $4.00 Cum.	51.15*	62.16*	4.00	108¾
Sutherland Paper 4¼% Conv.	46.92	59.24	4.25	113⅜
U. S. Gypsum Co. 7% Cum.	283.37	340.24	7.00	183¾
United Wallpaper Inc. 4% Cum. Conv.	2.14	(d)15.98	2.00	24¼
West Virginia Pulp & Paper 4½% Cum.	61.28c	61.06i	4.50	109½
COMMON STOCKS				
APW Products Co.	(d)0.81	(d)0.01	—	4⅛
American Writing Paper Corp.	.04	0.50	—	7⅝
Armstrong Cork Co.	6.57	7.84	$3.00	46⅛
Celotex Corp.	1.65c	2.20	1.00	15⅝
Certain-Teed Prods. Corp.	2.84	3.24	1.00	15⅜
Champion Paper & Fibre	5.15f	8.16	2.00	42⅜
Congoleum Nairn Co.	3.04	2.70	2.00	24½
Container Corp. of America	8.46	9.62	4.00	58⅞
Crown-Zellerbach	6.02c	6.84	2.00	40⅜
Dixie Cup Co.	7.44	8.58	1.50	43¾
Eastern Corp.	0.04	1.64	(h)	16⅝
Flintkote Co.	4.33	4.95	2.50	26½
Robert Gair Co., Inc.	2.11†	2.30†	0.70	9⅜
Great Northern Paper Co.	4.87	3.75	2.80	43⅜
International Paper Co.	7.12	8.14	2.50	44⅛
Johns-Manville Corp.	4.83	6.16	2.50	47⅛
Kimberly Clark Corp.	5.29	6.66i	1.80	42⅜
MacAndrews & Forbes Co.	3.64	3.77	3.00	38½
Marathon Corp.	3.29c	4.13i	1.40	34½
Mead Corp.	4.10	5.57a	1.60	27⅝
National Container Corp.	0.95	1.34	0.60	10⅝
Paraffine Cos. Inc.	0.85	0.90	0.60	16⅜
Rayonier, Inc.	4.75	6.36e	2.50	41⅜
Ruberoid Co.	8.72	9.06	3.25	53½
St. Regis Paper Co.	0.91	1.11	0.60	10⅛
Scott Paper Co.	6.07	7.38	3.60	41½
Sutherland Paper Co.	4.62	5.64	2.75	43¾
Union Bag & Paper Corp.	5.01	5.16	2.50	35⅛
United Board & Carton	(d)1.61b	0.58j	—	14⅜
U. S. Gypsum Co.	13.51	16.29	9.00	110¾
United Wallpaper	(d)0.01	(d)0.55	—	2⅞
West Virginia Pulp & Paper	8.58c	8.36i	5.00	61

(a) 12 months to approximately 6/15/50
(b) Year ended 11/13/49
(c) Year ended 1/31/50
(d) Deficit
(e) 12 months to 3/30/50
(f) 9 months to 12/31/49
(g) 12 months to approximately 4/30/50
(h) Declared 25c payable Sept. 1, 1950.
(i) 12 months to 7/31/50
(j) 12 months to 5/31/50.
(*) Earnings per combined preferred shares.
(†) Includes domestic and Canadian subsidiaries and 60% equity in Southern Paperboard Corp.

PRICES

The prices below reflect market quotations at the mill level on standard grades. Most orders accepted however, at price prevailing on date of shipment. Does not include spot offerings.

NEW YORK
Delivered Ports

Standard News, per ton—

Rolls, contract	$100.00/ —
Sheets	115.00/ —

F.o.b. Mills. Carload freight allowed, dock N. Y.

Kraft— per cwt., 40# base wgt.

Standard Wrapping Rolls ‡	$7.00/$7.25
No. 1 Wrapping Rolls ‡	7.75/ 8.00
Standard Bag ‡	6.75/ 7.00

Tissues—per ream 24x36 (480) 10 lbs. 2500 lbs or more

Wh. No. 1 Frd	$1.60 / —
Wh. No. 1 MG	1.60 / —
Wh. No. 1½	1.55 / —
Wh. No. 2	1.45 / —
Kraft Non-Tar	
White Non-Tar	

Toilet— per case of 100 rolls—1 M sheets

Unbleached 4½x4½	$5.90/ —
Unbleached 4½x5	5.85/ —
Bleached 4½x4½	7.10/ —
Bleached 4½x5	8.80/ —
Per Case of 50 rolls—2000 sheets	
Unbleached 4½x4½	$5.90/$6.25
Bleached 4½x4½	6.95/ —
Per Case of 100 rolls—1000 sheets	
Facial, 4½ x 5, 2 ply	$8.95/$9.45

Paper Towels—per case of 3750.

Wh. Jr. M'tif'd 9¼x9½	$5.65
Br. Sr. M'tif'd 10x12	4.00
Br. Jr. M'tif'd 9½x9¼	3.50
Br. Jr. Sgt. fold 10x10¾	3.35
Bldd. 7½ x 11, 24/25 rolls	$3.95/$6.25

Manila, per cwt.

No. 1 Jute Tag sheets*	$15.55/$17.55
Reg. Jute M.F. 40-lb., sheets*	14.00/ 16.00
Wrapping Manila	8.75/ 10.50
Printing Manila	10.00/ 11.00

* Less usual allowance for rolls.

WORLD WOOD PULP MARKETS
Fourth Quarter Contract Prices, Per Short Air-Dry Ton
Varying freight allowances — Atlantic Ports

	U. S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$75.00/ —	$70.00/ 75.00	†$82.50/ —		
Siderurna Pulping News	70.00/ —	70.00/ 75.00			
Soda, Bleached	130.00/ —	130.00/ —			
Sulphate, Bleached	128.00/167.50	141.00/ —	*165.00/167.50		
Sulphate, Unbl'd North'n		110.00/120.00	*138.00/165.00		
Sulphate, Unbl'd South'n	110.00/ —				Competitive
Sulphite Blchd. (S'ftw'd)	128.00/145.00	135.00/138.00	*160.00/ —		
Sulphite, Blchd. (H'dw'd)	145.00/ —				
Sulfite, Semi-blchd.					
Sulphite, Unbleached		117.00/120.00	*138.00/165.00		
Sulphite, Unbl'd (Glassine)		121.00/ —	*142.00/ —		

* On dock. † Delivered.

Gummed Tape—per bdl., 500 bdls. or more.

90-lb. 375 ft. GSI	$6.60/ —
60-lb. 600 ft. GSI	6.60/ —
35-lb. 800 ft. GSI	7.59/ —
35-lb. 500 ft. GSO	5.70/ —

Boards, per ton—

Filled News ‡	$92.50/ —
Plain Chip ‡	90.00/ 95.00
Blchd. Mla. L-d. Chip ‡	115.00/117.50
White Pat. coated .020	130.00/135.00
Kraft Liners 42 lb.	105.00/ —
Kraft Corr. .009	110.00/ —
Binders Boards ‡	135.00/ —

The following prices are representative distributors' resale prices:

Rag Content Bonds and Ledgers—
White, 20 lb.

	Bonds	4 Ctns.
		per cwt.
100% Rag Ex. No. 1	‡	$64.55/ —
100% Rag	‡	56.95/ —
75% Rag	‡	43.70/ —
50% Rag	‡	35.60/ —
25% Rag	‡	29.75/ —

	Ledgers	4 Ctns.
		per cwt.
100% Rag Ex. No. 1	‡	$66.35/ —
100% Rag	‡	58.20/ —
75% Rag	‡	44.95/ —
50% Rag	‡	36.95/ —
25% Rag	‡	31.00/ —

Sulphite Bonds and Ledgers
White, 20 lb.

	Bonds	4 Ctns.
		per cwt.
Watermarked		$18.15/$19.00
Plain		17.10/ 17.45

	Ledgers	4 Ctns.
		per cwt.
Watermarked		$20.15/$20.30
Plain		18.55/ 18.75

White Book

	Conversion Coated	Case
		per cwt.
No. 1		$21.65/$21.75
No. 2		20.15/ 20.40
No. 3		19.65/ —
	Machine Coated	
No. 1		$16.90/ 17.15
No. 2		14.90/ 15.15
	Uncoated	
No. 1 Antique (Watermarked)		$17.15/ 18.65
Offset		16.15/ 16.90
A Grade E. F.		16.15/ —
A Grade S. C.		16.65/ 16.90
B Grade E. F.		15.40/ —
B Grade S. C.		16.15/ —

‡ Indicates a price change.

WASTE PAPER MARKET

The following quotations were gathered from major dealers in each market. They are an indication of the price range in which volume tonnage was moving on the date specified. Spot offerings or special packings are not necessarily included. Prices to mills, per ton, f.o.b. cars shipping point (includes brokers' fee.) ALL PRICES NOMINAL.

	New York	Philadelphia	Boston	Chicago
	Sept. 25	Sept. 8	Sept. 22	Sept. 5
No. 1 Mixed Paper	$19.00/ 22.00	$18.00/ 20.00	$16.00/ 17.00	$19.00/ —
Boxboard Cuts	19.00/ 20.00	18.00/ 20.00	16.00/ —	23.00/ —
Mill Wrappers	20.00/ 29.00	25.00/ 30.00	29.00/ —	21.00/ —
No. 1 News	25.00/ 26.00	21.00/ 23.00	21.00/ 22.00	25.00/ —
Over-issue News	27.00/ 32.00	24.00/ 28.00	23.00/ —	28.00/ —
Corrugated Containers	33.00/ 35.00	32.00/ 36.00	33.00/ 35.00	35.00/ —
New Corrugated Cuts	38.00/ 40.00	35.00/ 40.00	35.00/ 40.00	40.00/ —
Double Kraft Ld. Corr. Cuts	65.00/ 70.00	55.00/ 58.00	70.00/ —	79.00/ —*
Used Kraft Bags	42.50/ —	55.00/ 58.00	50.00/ —	45.00/ —
No. 1 Brown Kraft Paper	42.50/ —	45.00/ 50.00	60.00/ —	45.00/ —
Super Resorted Br. Kraft	55.00/ —	55.00/ 60.00	65.00/ —	55.00/ —
New Br. Kraft Env. Cuts	95.00/100.00	80.00/ 90.00	100.00/ —	85.00/ —
New Br. Kraft Cuts	58.00/ 65.00	75.00/ 80.00	70.00/ 75.00	80.00/ —
No. 1 Gdwd Shvs.	40.00/ 45.00	35.00/ 45.00	60.00/ —	40.00/ —
White Newsblanks	70.00/ 75.00	65.00/ 75.00	80.00/ —	60.00/ —
No. 1 Flyleaf Shvs.	50.00/ 55.00	45.00/ 50.00	60.00/ 65.00	55.00/ —
No. 1 Soft Wht. Shvs.	100.00/115.00	110.00/125.00	100.00/105.00	105.00/ —
Super Soft Wht. Shvs.	125.00/127.00	120.00/130.00	110.00/115.00	115.00/ —
Hd. Wht. Shvs.	120.00/130.00	130.00/150.00	120.00/135.00	130.00/ —
Hd. Wht. Env. Cuts	140.00/150.00	140.00/170.00	140.00/170.00	140.00/ —
New Manila Env. Cuts	80.00/ 90.00	80.00/ 90.00	85.00/ 90.00	80.00/ —
Col. Tab Cards	55.00/ —	55.00/ 70.00	50.00/ 55.00	— / —
Manila Tab Cards	95.00/115.00	95.00/120.00	95.00/100.00	100.00/ —
No. 1 Mixed Ledger	55.00/ 60.00	55.00/ 60.00	55.00/ 60.00	— / —
White Ledger	75.00/ 80.00	75.00/ 80.00	75.00/ —	75.00/ —
Mixed Books & Mags.†	27.50/ 30.00	30.00/ 35.00	30.00/ 35.00	— / —
No. 1 Rep'd. Hvy. Books‡	35.00/ —	40.00/ 45.00	40.00/ 50.00	— / —

* Delivered. † Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% groundwood.

Rag Market

New Domestic Cotton Cuttings
(Prices to Dealers, F.o.b. Ship. Pt.)
ALL PRICES NOMINAL

White Shirt	$15.00/$16.00
Unbleached Muslin	14.00/ 15.00
Light Silesias	8.50/ 9.50
White Black Blue Overall	9.50/ 10.50
Blue Overalls	5.00/ 5.25
Fancy Shirt	5.50/ 6.00
Percales	7.00/ 8.00
Light Prints	7.00/ 8.00
No. 1 Washables	$4.50/ $4.75
Bleachable Khaki	8.00/ —
Unbleachable Khaki	5.50/ —
Cottonades	4.50/ 5.00
Lt. Flannelettes	8.50/ 9.00
Men's Corduroy	4.50/ 5.00
Women's Corduroy	4.50/ 5.00
Canton Flanneis, Blchd.	13.00/ —
Underwear Cutters, Blchd.	14.00/ 15.00
Underwear Cutters, Unblchd.	13.00/ 14.00

Old Domestic Cotton Rags
(Prices to Dealers, F.o.b. Ship. Pt.)
ALL PRICES NOMINAL

	Per 100 lbs.
Mixed White	$4.25/$4.75
Cotton Pants & Overalls	3.50/ 4.00
Thirds and Blues, Repacked	3.25/ 3.50
No. 1 Roofing Rags	2.25/ 2.50
No. 2 Roofing Rags	1.90/ 2.00
No. 3 & 4 Roofing Rags	1.75/ 1.85
Roofing Bagging	1.75/ 1.85

New Foreign Cotton Cuttings
(Prices to Mills, F.o.b. Dock, N. Y.)

	Per 100 lbs.
New Dark Cuttings	$4.25/$4.75
New Mixed Cuttings	4.50/ 5.00
Light Silesias	7.50/ 8.00

Light Flannelettes	7.50/ 8.00
New White Cuttings	nominal
New Unbleached Cuttings	nominal
Fancy Shirt Cuttings	6.00/ 7.00
Light Prints	6.00/ 7.00
Bleachable Khaki, No. 1	5.50/ 6.00
Unbl. Khaki, No. 1	4.50/ 5.00

Old Foreign Rags

(Prices to Mills, F.o.b. Dock, N. Y.)

	Per 100 lbs.
No. 1 White Cottons	$6.50/$7.50
No. 2 White Cottons	5.50/ 6.00
No. 3 White Cottons	4.00/ 4.50
No. 4 White Cottons	3.50/ 3.75
Extra Light Prints	4.50/ 5.00
Old Light Prints	4.00/ 4.25
Med. Light Prints	3.50/ 3.75
Dutch Blue Cottons	3.75/ 4.00
Checks and Blue	3.00/ 3.50
Linsey Garments	2.75/ 3.00
Dark Cottons, European	2.25/ 2.50
Dark Cottons, Egyptian	2.15/ 2.30
Old Shopperies	2.10/ 2.25
New Shopperies	2.25/ 2.50

Bagging

(Prices to Dealers, f.o.b. N. Y.)

	Per 100 lbs.
Foreign Gunny	$6.25/$6.50
Domestic Gunny, No. 1	6.50/ 7.00
Heavy Wool Tares	6.00/ 6.50
Foreign Manila Rope	5.25/ 5.50
Domestic Manila Rope	5.25/ 5.50
Jute Strings	5.50/ 5.75
No. 1 Sisal Strings	3.00/ 4.00
Mixed Strings	nominal
Paper Mill Tares	3.00/ 3.50
No. 1 Scrap Burlap	
Foreign	4.50/ 5.00
Domestic	5.50/ 6.00
Austr. Wool Pouches	6.50/ 7.00
New Burlap Cuttings	7.00/ 7.50

MATERIALS

Aluminum, sulfate:		
coml. bags, wks. cwt.	1.50	
iron-free	2.75	
Alcohol, ethyl:		
tax free, dms. c.l. gal.	.57	/ .87
dedl. East Miss.		
Casein, acid-prec.:		
dom. sh. pt. c.l. lb.	.37	/ .41½
imp. ex dock lb.	.37	/ .38
Caustic soda:		
c.l. wks. solid, 76%, cwt.	3.20	/ 3.35
flak. & grd. 100-lb. drums	3.60	/ 3.75
liquid 50% tanks	2.40	/ 2.55
liquid 70% tanks	2.50	/ 2.65
China clay:		
dom. air-float. filler, c.l. wks. ton	10.00	
water-washed	11.00	
coating	16.00	/30.00
imported, ex whse. short ton	15.20	/28.35
Chlorine:		
single-unit tanks, works cwt.	2.55	/ 2.70
multi-unit cwt.	3.05	/ 4.75
Formaldehyde:		
USP, inh. dms. c.l. wks. lb.	.0570	
l.c.l. E. wks.	.0620	
Fuel oil:		
Bunker C, No. 6 Cal. hvy tanks, refinery bbl.	1.25	/ 1.55
light bbl.	1.65	/ 2.10
Hydrogen peroxide:		
USP, 35% cbys. E. of Miss. lb.	.23½	
Lime:		
hydrated, bags, wks. Buffalo ton	13.50	
Rosin:		
B gum, drms, c.l. Savan. cwt.	4.10	
G, H, I, K, do. cwt.	6.61	
FF wood, do. cwt.	5.00	
Rosin size:		
70%, gum & pale grds, tank cars, south, sh. pt. cwt.	5.55	/ 5.75
Salt cake:		
dom. bulk, c.l. contract del'd ton	18.00	/20.00
wks. frt. all ton	22.00	/ —
Soda ash:		
light, 58%, bags, wks.	1.35	/ 1.50
bulk cwt.	1.10	/ 1.20
Sodium silicate 40°:		
turbid, c.l. wks. cwt.	1.10	
l.c.l. wks.	1.30	/ 1.40
Sodium peroxide:		
dms. c.l. E. of Miss. lb.	.18	
l.c.l. do lb.	.18½	/ .19
Soybean, protein:		
chem. isol, wks. c.l. lb.	.24	/ —
Cinn. and Chic.		
Sulfuric acid:		
60° Be. cbys. c.l. cwt.	1.40	
E. wks.		
l.c.l. cwt.	1.80	/ 2.50
Sulfur:		
crude, c.l. mines, contract, long ton	18.00	
f.o.b. vessels Gulf	19.50	
Export, f.o.b. Gulf	22.00	
Sulfur dioxide:		
liquid, coml. cyl. wks. lb.	.09	
multi-unit cars lb.	.0535	
Starches:		
pearl corn, bags, c.l. Chic. cwt.	5.47	/ —
white dextrines, c.l. Chic. cwt.	6.74	/ —
potato, Idaho, c.l. wks. cwt.	5.25	/ —
potato, Maine, c.l. wks. cwt.	5.25	/ —
tapioca, conv. dextrines cwt.	6.75	/ 7.25
medium grds. Gulf and East Coast ports	5.50	/ 6.25
low, Siam, on dock N. Y.	4.75	/ 5.25
Talc:		
domestic, 50-lb. sacks, c.l. wks. ton	23.00	/28.00
Titanium dioxide:		
anastase, c.l. deld., bags. lb.	.19½	
l.c.l. deld. lb.	.20	
rutile, c.l. deld. lb.	.21½	
l.c.l. deld. lb.	.22½	

N.B.: For special market conditions, see *Trends*.

IMPORTS

IMPORTS AT NEW YORK

Week Ending Sept. 23

Newsprint

(———), Markland, Liverpool, N.S., 4174 rolls, 3568 rolls (Alexandria).

Montmorency Paper Co., Trollefoss, Botwood, 5356 rolls.

Madden Reeve Angel & Co., Inc., Mormacpine, Kotka, 1388 rolls.

Madden Reeve Angel & Co., Inc., Tidaholm, Kotka, 617 rolls.

R. A. Olsen, Newscarrier, Donnacona, 360 rolls.

R. A. Olsen, Kermic, Donnacona, 375 rolls.

(———), Bowgran, Port Alfred, 1599 rolls.

R. A. Olsen, G.T.D., Donnacona, 380 rolls.

H. C. Craig & Co., Donpaco, Donnacona, 345 rolls.

R. A. Olsen, Kermic, Donnacona, 342 ro'ls.

International Paper Sales Co., Bonde, Three Rivers, 5669 rolls.

R. A. Olser, G.D.D., Donnacona, 329 rolls.

(———), Bowrio, Port Alfred, 2274 rolls.

R. A. Olsen, Donpaco, Donnacona, 316 rolls.

News Syndicate Co., Karen, Thorold, 2536 rolls.

R. A. Olsen, A.C.D., Donnacona, 330 rolls.

News Syndicate Co., Elin Hope, Baie Comeau, 7377 rolls.

Morning Ledger, Ethel Tombs, Gatineau, 298 rolls.

Wallpaper

Triton Co., Flying Clipper, Yokohama, 5 cs.

Taub Hummel & Schnall, Parthia, Liverpool, 14 ctns.

C. A. Haynes & Co., Parthia, Liverpool, 33 ctns.

All Transport, Inc., De Grasse, Havre, 2 cs.

Gummed Paper

B. F. Drakenfeld & Co., Parthia, Liverpool, 35 cs, 13 drums.

Parchment

Gerhard & Hey, Queen Mary, Southampton, 1 cs.

Meadows Wye & Co., Queen Mary, Southampton, 1 cs.

Writing Paper

All Transport, Inc., Ile de France, Havre, 2 cs.

W. J. Byrnes & Co., De Grasse, Havre, 1 cs.

Cardboard

F. C. Strype, Westerdam, Rotterdam, 5 cs. (uncoated).

Crepe Paper

Brindage Merchandise Co., Westerdam, Rotterdam, 26 cs.

Sulphite Paper

B. M. Heede, Stavangerfjord, Oslo, 5 bls.

Stencil Paper

Stevens Nelson Paper Corp., Halland, Yokohama, 2 cs.

Wrapping Paper

Moser Bag & Paper Co., Exermont, Trieste, 159 rolls.

Miscellaneous Paper

Hermann Paper Co., Westerdam, Rotterdam, 34 bls.

Rags, Baggings, etc.

Castle & Overton, Inc., Flying Clipper, Kobe, 60 bls. new cuttings.

Brazilian Woolstock, Inc., Mormacstar, Santos, 19 bls. wool rags.

(———), Selma Thorden, Malmo, 55 bls. rags.

State Street Trust Co., Selma Thorden, Malmo, 47 bls. rags.

A. Siegle Corp., Parthia, Liverpool, 129 bls. jute waste.

(———), Parthia, Liverpool, 138 bls. wooden rags & thread waste.

A. de Vries Trading Corp., Eugenio C., Genoa, 58 bls. scrap bagging.

Atlas Fiber Co., Mormacmail, Buenos Aires, 33 bls. rags.

Casein

(———), Flevero, Buenos Aires, 340 bags (lactic).

Crawford & Co., Mormacmail, Buenos Aires, 2000 bags.

Wilbur Ellis, Mormacmail, Buenos Aires, 1000 bags.

East Asiatic Co., Tekla, Buenos Aires, 500 bags (lactic).

Woodpulp

Price & Pierce, Ltd., Markland, Liverpool, N.S., 945 bls. sulphite pulp.

Lansen Naeve Corp., Houffalize, Antwerp, 1 ble. woodpulp.

Woodpulp Boards

Jay Madden Corp., Tidaholm, Kotka, 354 rolls, 666 bls.

IMPORTS AT ALBANY

Week Ending Sept. 23

Pagel Horton & Co., Inc., Selma Thorden, Karskar, 2582 bls. woodpulp.

Pagel Horton & Co., Inc., Selma Thorden, Hornefors, 3048 bls. woodpulp.

Price & Pierce, Ltd., Selma Thorden, Ornskoldsvik, 2400 bls. dry chemical pulp.

Bulkley Dunton Pulp Co., Selma Thorden, Sazcin, 1188 bls. woodpulp.

IMPORTS AT NEWARK

Week Ending Sept. 23

Montmorency Paper Co., Westralia, Quebec, 3753 rolls newsprint.

IMPORTS AT PHILADELPHIA

Week Ending Sept. 23

Bulkley Dunton Co., American Lawyer, Rotterdam, 712 bls. woodpulp.

D. Galloway, American Planter, Dunkirk, 106 bls. jute waste.

Pagel Horton & Co., Inc., Selma Thorden, Karskar, 762 bls. woodpulp.

Jay Madden Corp., Tidaholm, Kotka, 150 rolls wrapping paper.

Madden Reeve Angel & Co. Inc., Tidaholm, Kotka, 439 rolls newsprint.

Pulp Sales Corp., Tidaholm, Kotka, 260 bls. sulphate pulp, 1858 bls. sulphite pulp.

The Borregaard Co. Inc., Tidaholm, Gothenburg, 482 rolls wrapping paper.

Madden Reeve Angel & Co. Inc., Mormacpine, Kotka, 350 rolls newsprint.

China American Paper & Pulp Co., Exermont, Trieste, 895 bls. woodpulp.

E. J. Keller Co. Inc., Exton, Leghorn, 56 bls. rags.

Montmorency Paper Co. Westralia, Quebec, 1372 rolls newsprint.

IMPORTS AT BOSTON

Week Ending Sept. 23

1st National Bank of Boston, American Planter, Hamburg, 800 bags ground glue.

Pagel Horton & Co. Inc., Selma Thorden, Karskar, 466 bls. woodpulp.

Stone & Downer Co. Parthia, Liverpool, 16 drums gummed paper.

Cowa Trading Co., Exton, Genoa, 70 bls. cotton waste.

IMPORTS AT NORFOLK

Week Ending Sept. 23

New England Waste Co., Steel Apprentice, Bombay, 300 bls. rags, 1250 bls. cotton waste.

Railway Supply & Manufacturing Co., Steel Apprentice, Bombay, 100 bls. cotton waste.

Williams Waste Co., Steel Apprentice, Bombay, 100 bls. old jute rags.

H. W. Peabody & Co., Steel Apprentice, Bombay, 557 bls. cotton waste.

IMPORTS AT BALTIMORE

Week Ending Sept. 23

Gottesman & Co. Inc., Tidaholm, Gothenburg, 254 bls. sulphate pulp.

Pulp Sales Corp., Tidaholm, Kotka, 3760 bls. sulphite pulp, 4645 bls. sulphate pulp.

Jay Madden Corp., Tidaholm, Kotka, 233 rolls woodpulp boards.

Pulp Sales Corp., Mormacpine, Kotka, 237 rolls paper waste.

Crown Cork & Seal Co., Tekla, Buenos Aires, 555 bags gluestock.

ASSOCIATIONS

SOUTHERN DIV. N.P.B.M.A. TO MEET

ASHEVILLE, N. C.—Some 125 persons are expected to attend the annual meeting of the Southern division of the National Paper Box Manufacturers Assn. at the Grove Park Inn, October 5-8.

According to William Price, of Burlington, chairman of the division and president of the Carolina Paper Box Co., the chief speakers will include A. S. Daniel, executive vice-president of W. C. Ritchie & Co., Chicago, and president of the national association; and H. H. Loeffler, of Washington, D. C., chairman of the planning sub-committee of the Munitions Board Packaging Industry Advisory Committee.

Superintendents Northwestern Division Meeting

At the business meeting of the convention, held at the Schroeder hotel, Milwaukee, Wis., September 16, 1950, the following slate of officers was presented in a letter written by F. X. Kreiling, chairman of the nominating committee, and read by L. S. Sabatke, retiring chairman of the Division:

Chairman, Mace Harris, Northwest Paper Co., Cloquet, Minn.; first vice-chairman, Paul West, Thilmany Pulp and Paper Co., Kaukauna, Wis.; second vice-chairman, Lawrence Murtfeldt, Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis.; secretary-treasurer, Myles Reif, Blandin Paper Co., Grand Rapids, Minn.

The nominating committee also suggested that Charles Reese, whose term of office as a member of the board of trustees of the Division expired this year, continue to serve another two-year term.

The recommendations of the nominating committee were accepted unanimously and the men named duly elected.

217
JOSEPH LUDINGTON
AND JOHN GARLAND
DURING THE EARLY PART OF 1848,
PLACED INTO OPERATION THE FIRST
PAPER MILL IN THE STATE OF WISCONSIN.
MARKER ERECTED BY
THE NORTHWESTERN DIVISION OF
THE AMERICAN PULP AND PAPER MILL
SUPERINTENDENTS ASSOCIATION, INC.

Commemorate Wisconsin's First Mill

A special feature of the fall meeting program was the dedication of a marker commemorating the launching of the first paper mill in the State of Wisconsin.

The ceremony opened promptly at 3:30 p.m. on September 16, and included introductory remarks by Harry E. Weston, secretary and treasurer, The American Pulp and Paper Mill Superintendents Assn., Chicago, Ill.; comments by D. C. Everest on The Paper Industry of Wisconsin; unveiling of the marker and remarks incident thereto by Fred C. Boyce, Wauwatosa, Wis. (first active president of the Superintendents Assn.); presentation commentary by L. S. Sabatke, Marathon Corp., Rothschild, Wis. (chairman of the Northwestern Division of the Superintendents Assn.); and words of acceptance by John H. Stewart, general superintendent, The Milwaukee Road, Milwaukee, Wis.

The marker is located on the front of the Soo Line freight house, 217 North Plankinton street, Milwaukee, this building and adjoining property being owned by the Milwaukee Road and leased to the Soo Line.

Mr. Weston also introduced each one of the several speakers.

Mr. Everest in relating the story of the paper industry of Wisconsin commented that the dedication commemorated one of the most significant happenings in the history of Wis.; that the paper mill, built by Joseph Ludington and John Garland, in 1848, produced 400 pounds of paper daily and employed ten people in its operation; that the daily production of paper in Wisconsin today amounts to 10,520,000 pounds.

He also stated that more than 200,000 persons are now employed in the state in the manufacture of paper and paper products, aside from the printing and publishing field.

Mr. Boyce, as he was about to unveil the marker, said that the paper industry of Wisconsin was only a little better than 50 years old when he became a part of it; told briefly of the founding of the Superintendents Assn. on June 3-4, 1919, at Appleton, Wis.; and mentioned his good fortune in serving the association as its first active president.

Mr. Boyce also told of his pleasure in his part of the dedication program; and dramatically closed his remarks with the statement: "May this memorial to them (Ludington and Garland) and to their enterprise serve as an inspiration to the many youth who pass this way, and instill in them the desire to carry on with the tradition that

has made this country great — vision, courage, and free enterprise."

A rather detailed description of the Ludington and Garland mill was given by Mr. Sabatke. He said that the paper machine installed in the mill had been used previously in the plant of Butler and Hunt in St. Charles, Ill.; that it consisted of one cylinder, three 36 in. dryers and a revolving cutter which was tied in with the dryer drive. He further stated that the mill also was equipped with two 25 horsepower steam engines and one beating engine; that the main mill building was of brick—50 feet long, 45 feet wide, and two and one-half stories high; and that the total cost of the mill —building and machinery—was about $9,500.

Mr. Stewart upon accepting the marker mentioned that the paper industry and the Milwaukee Railroad had a lot in common. He reported that the Milwaukee Road handles approximately 12,000 carloads of paper industry business annually in the Wisconsin-Michigan territory — not including materials such as chemicals, coal, machinery, etc.

He called attention to the fact that the Ludington and Garland Mill and the Milwaukee Road started business about the same time in approximately the same location — the Milwaukee Road having started in 1850 in Milwaukee.

The legend on the marker reads:

Near this spot on the north bank of the Menominee River, Joseph Ludington and John Garland, during the early part of 1948, placed into operation the first paper mill in the State of Wisconsin.

Marker erected by the Northwestern Division of The American Pulp and Paper Mill Superintendents Association, Inc.

Dedicated September 16, 1950.

New Officers of New York-Canadian Division

Shown here are the newly elected officers for 1951 of the New York-Canadian Division of the American Pulp and Paper Mill Superintendents Assn., chosen at the fall convention held in Ottawa, from left to right, Carl E. Reynolds, Armstrong Cork Co., Fulton, N. Y., 3rd Vice-Chairman; C. B. Davies, The E. B. Eddy Co., Hull, Que., 2nd Vice-Chairman; C. E. Cole, The Mutual Box Board Co., Utica, N. Y., 1st Vice-Chairman, H. S. Cutler, United Board & Carton Corp., Lockport, N. Y., Chairman-elect for Jan. 1, 1951; D. R. Dick, Howard Smith Paper Mills Ltd., Cornwall, Ont., Chairman; F. J. Deegan, Ciba Co., Ltd., Montreal, Que., Secretary; G. Howard Smith, Howard Smith Paper Mills Ltd., Cornwall, Ont., Treasurer.

SOUTHERN TRADES MEETING

DAYTONA BEACH, Fla. — More than 250 Southern paper distributors and their wives met at the Sheraton Plaza hotel for a two-day convention, September 14-16.

Nominated and slated for election after luncheon the first day were Robert B. Roach, president of Roach Paper Co., Little Rock, president; Dudley Forsmark, vice-president of Taylor Paper Co., Memphis, first vice-president; Hugh O. Smith, vice-president of Jackson Paper Co., Jackson, Miss., second vice-president; Charles D. Hurt, Atlanta, counsel secretary; and William K. Wyant, Sr., Atlanta, treasurer.

Speakers at the morning session were V. G. McGeehee, president of Jacksonville Paper Co.; E. J. Durkin, president of E. J. Durkin Co.; and W. G. Leathers, National Paper Trade Assn. executive secretary.

Mr. McGeehee, whose topic was "Power in Purpose," prefaced his talk with a prophecy that rush buying, evident in the paper trade since the Korean outbreak, "would be leveled out" by judicious allocation of materials that might become scarce.

PLOWMAN TO ADDRESS FOOD INDUSTRY

PHILADELPHIA, Pa. — Francis Plowman, vice-president of the Scott Paper Co., will participate in a panel discussion on October 18 on the paper and cellophane industries' plans for fulfilling U. S. food requirements during the current defense emergency. Announcement that Mr. Plowman would speak was made by John A. Logan, president of the National Association of

CORROSION PLAYS NO FAVORITES

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No business escapes the effects of corrosion. It costs industry over $6,000,000,000.00 annually. Yet much of this costly damage might be avoided by taking just two simple steps —

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Food Chains. The discussion will be part of the three-day 17th annual meeting of the association, to be held at Cincinnati, O., October 16-18.

The panel with which Mr. Plowman will speak will discuss the Korean and world situations, and the possible effects on food supplies and distribution. The discussions have been scheduled, according to Mr. Logan, to assist the industry in making any possible adjustments that may be required by future developments.

The National Association of Food Chains comprises more than 200 United States, Canadian and Mexican food chain firms.

KALAMAZOO VALLEY SECTION MEETING

KALAMAZOO, Mich. — The October 5 meeting of the Kalamazoo Valley Section of TAPPI will be on the subject of "Paper Printing Problems from the standpoint of the Jobber and Printer." W. H. Bureau, of the Butler Paper Corp., who has had extensive experience in the field will be the speaker of the evening. The meeting will be held at the Columbia hotel in Kalamazoo.

The members of TAPPI have arranged a small cocktail party, scheduled for 6:00 p.m. in honor of "The Salesman" — a token of appreciation of his unlimited help and support during the years.

FORESTRY

OPEN B. C. RESEARCH FOREST

VANCOUVER, B. C. — Official opening of the 9800-acre research forest of the University of British Columbia at Pitt Lake, four miles north of Haney, took place recently. The land was granted by the B. C. Government and the B. C. Loggers' Assn. donated $120,000 for camp buildings and maintenance. Hon. Eric Hamber, Chancellor of the University, and Dr. Norman MacKenzie, university president, officially opened the camp in ceremonies at the outdoor class room.

The variety of terrain and timber give University of British Columbia forestry students an opportunity to gain practical knowledge of forestry practice.

The 9800 acres, chosen by Professor Malcolm Knapp, contain a wide range of timber types and conditions to make up an ideal research area.

Sixteen percent of the timber is old growth fir, cedar and hemlock, and 33 percent is stocked with a good stand of second-growth Douglas fir, cedar and hemlock.

Groups of 50 to 70 forestry students will occupy the camp for 21-day periods for training divided into three phases.

First seven days will be devoted to forest engineering. The embryo foresters will map the area in detail, run road surveys and apply other engineering knowledge.

Third period will be occupied with silviculture. Methods of forest planting and timber care will be studied. Timber growth will be examined in relation to soil conditions and periodic soil profiles will indicate condition of humus layers.

RECORD TIMBER CUT

OTTAWA—Despite a severe shortage of bushmen for timber-cutting in the Port Arthur area of Ontario and little hope said to exist that relief would be forthcoming until cold weather halts building work in the West, indications are that this year's cut of timber in Thunder Bay district would equal or surpass the big season of 1948-49.

SUPT. OF FOREST PRODUCTS LAB.

OTTAWA—Dr. H. Schwartz has been appointed Superintendent of the Forest Products Laboratory in Ottawa for the Forestry Branch, Canadian Government's Department of Resources and Development.

ANOTHER USE FOR PAPER

OTTAWA — Full scale experiments in water-bombing of forest fires in Ontario are expected to be made by the Department of Lands and Forests, with planes dropping bags containing 50 pounds of water each on burning timber. These tests will aim to improve the methods of combatting such forest fires.

PULP AND PAPER COURSE

NEW YORK — New York University starts its survey courses in Pulp and Paper on October 4. It will run for 15 weeks under the direction of William R. Willets.

WESTERN MICHIGAN DOUBLES

KALAMAZOO, Mich. — After two years, the pulp and paper department has doubled its enrollment. This year 28 sophomores, juniors and seniors are in curriculum with applications for 28 more seeking admission.

GERMANY SEEKS KRAFT

WASHINGTON, D. C. — ECA authorized procurement of $1 million kraft pulp from North America, December 31, 1950, to June 30, 1951. Bids to be opened October 5.

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NEW LITERATURE

Anemostat Corp. Chart, "How to Check the Operation of an Air Conditioning System." Simple instructions on application of "Anemothern Air Meter."

Atlas Powder Co. Booklet, "Chemicals From Farm Products." The story of an industrial plant that has become a new kind of "farmers' market" for converting farm raw materials.

Automatic Steel Products, Inc. Bulletin 216, "Mercury Clutches," a general bulletin on various applications. Bulletin 217, deals with Mercury automatic clutches applied to gasoline engines; Bulletin 218, covers electric motor installations.

Beaver Pipe Tools, Inc. Pamphlet, "The Beaver 102-PD (Power Drive) Pipe Cutter." Also describes No. 77 Pipe Threader.

Chemonomics, Inc. Book, 108 pp., price $5.00, "The Economics of the Printing Ink Industry," by Robert S. Aries and Anthony Nickolaus. Industry survey showing markets, products, trends, purchases and economic characteristics of the U. S. ink industry.

The J. E. Doyle Co. Reprints, "Doyle Completely Automatic Infrared Dryer," "The Sheet Heater."

Dy-Chek Co. Pamphlet, "The Dye Penetrant Method of Inspection." Application instructions.

The Electric Auto-Lite Co. 1950 Folder, "Auto-Lite Indicating and Recording Thermometers." Covers five different industrial types of thermometers.

The B. F. Goodrich Co. Bulletin 9765, "Plastikon Rubber Putty." Cites advantages of product where vibration, corrosion or moisture exists.

Hall Laboratories, Inc. Bulletin IRE50. Describes "one-minute tests" for determining water hardness.

The Frank G. Hough Co. Job Study No. 15, "Hough Payloader." Report on one company's progressive development of a complete bulk material movement and handling system.

Industrial Ovens, Inc. Booklet, 24 pp., "Blueprint for Industry, Part V." Details units and systems developed for handling and processing paper, film, foil and textile webs.

Ingersoll-Rand Co. Pamphlet, "Spot-Air, The Only Gasoline-Powered Compressor of its Kind." Bulletin, "The 'T' Series Type '3' Compressor."

Johnstone Engineering & Machine Co. Bulletin 550, "Medium Duty Johnstone Twelve Score Cut Slitter and Rewinder"; Bulletin 650, "Heavy Duty Johnstone Fourteen Score Cut Slitter and Rewinder."

Maurice A. Knight Co. Bulletin No. 4, "Permanite Acid, Solvent, Alkali-Proof Resin Cement." Application instructions.

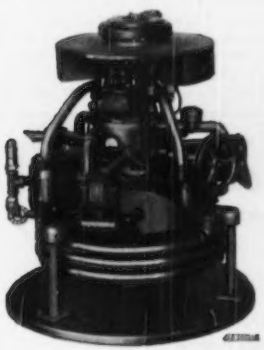
NEW EQUIPMENT

Full Flow Valve

The full throttling, full flow valve is a new 200-lb. bronze W.S. globe which the producer claims is quite an advancement in design. Outstanding features are the extra high lift of the disc, the exceptionally large flow areas above and below the seat, and the wide nominal pipe-size opening through the seat. Advantages are said to be: full flow through the seat when valve is fully open, virtual elimination of turbulence, cut in pressure drop to minimum.

Spot-Air Compressor

The Spot-Air Compressor is a 36 cfm gasoline-driven air power unit. It weighs 265 lbs. ready to run, and

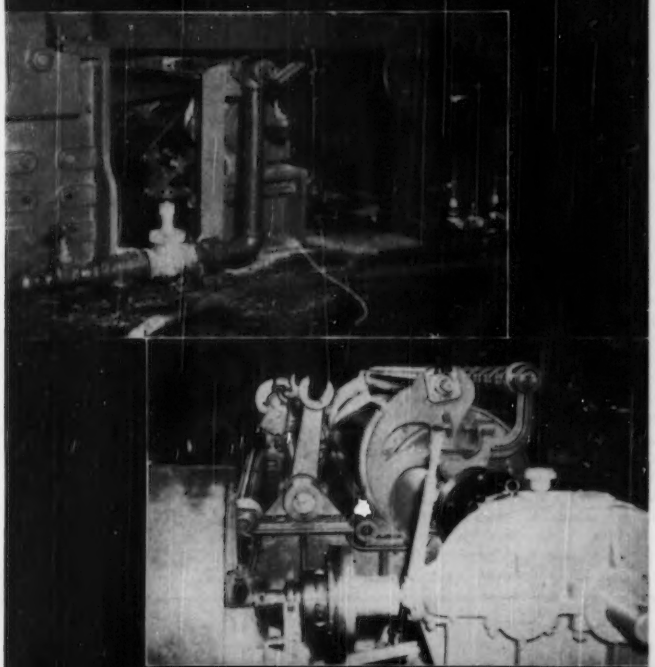


stands 32 ins. high on a 27-inch diameter baseplate. Special wheelbarrow mounting enables one man to take compressor and air tools almost anywhere. Horizontal arrangement of three power cylinders and three air cylinders spaced alternately at 60° intervals around a vertical single-throw crankshaft is designed to give a smooth conversion of engine power into air power without need of a heavy flywheel. The 4-cycle gasoline engine is equipped with overhead alloy steel valves with adjustable tappets. Fuel-tank capacity permits from two and one-half hours continuous operation.

Characterized Control Drive

The characterized control drive can be tuned to the requirements of a special application. Completely enclosed and air-operated, the drive makes it possible to parallel characteristics of a driven device with characteristics of other equipment, thereby

LODDING DOCTORS



From Fourdrinier to Reel

Lodding Engineering Corporation, Worcester, Mass.
Represented by W. E. Greene Corporation,
Woolworth Building, New York.

AMERICAN PAPER AND PULP ASSOCIATION'S PAPER AND PRODUCTION RATIO REPORT

(Production as percent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

	Aug. 19	Aug. 26	Sept. 2	Sept. 9	Sept. 16
1950	105.6	107.0	105.9	84.5r	110.5
	Aug. 20	Aug. 27	Sept. 3	Sept. 10	Sept. 17
1949	*89.3*	*90.3*	*89.3*	*73.7*	*94.0*

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1949	*94.6*	*92.8*	*89.1*	*85.1*	*82.7*	*78.6*	*72.8*	*87.6*	*89.7*	*96.0*	*98.2*	*89.8*	*88.0*
1950	97.6	101.1‡	102.6‡	100.9‡	101.8‡	103.2‡	90.8‡	105.8‡					

r Revised.
‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1943	1944	1945	1946	1947	1948	1949	1950
Year to Date	88.1	87.8	88.8	100.0	103.4	96.8	85.7	100.6
Year Average	87.8	88.1	89.4	100.1	104.3	96.2	88.0	

PAPERBOARD OPERATING RATIOS†

	Aug. 19	Aug. 26	Sept. 2	Sept. 9	Sept. 16
1950	101	100	100	81	100
	Aug. 20	Aug. 27	Sept. 3	Sept. 10	Sept. 17
1949	*87*	*86*	*89*	*72*	*92*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1949	*88*	*85*	*79*	*79*	*78*	*75*	*64*	*86*	*87*	*94*	*93*	*83*	*83*
1950	88	92	91	92	91	94	82	100					

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

securing a unified system, it is said. Consists of a double-acting air cylinder (with rigid supporting stand and enclosure), a positioning relay, and manual operating wheel or lever. The positioning relay, which provides the drive's characterizing feature, embodies a cam whose shape determines the relation of control drive position to control loading pressure. Three cams are included with each drive and may be used interchangeably to obtain positions which are proportional to the first power (straight line), square, or square root of the control loading pressure. The drive is described as ideal for pulp and paper mills, chemical and other process plants.

Manual 4-Way Valve

The new Ardee valves control 150 p.s.i. air pressure and handle liquid pressures to 1000 p.s.i. Available in pipe sizes from ¼ to ¾ inch. A tubular sealing member slides over the peripheral surface of a rotor, maintaining intimate contact during operation of the valve. The non-interflow characteristic is held to be important where infinitely variable throttling is desirable, as on materials handling equipment, etc.

OBITUARIES

James C. DeCoster, 81, died September 17 at Springfield, Mass. He was for 60 years associated with the sales department of the American Writing Paper Co., Holyoke, retiring several years ago because of ill health.

Ted J. Holzem, president of the Appleton Manufacturing Co., Appleton, Wis., and his wife, were killed September 17 when their plane crashed near Antigo, Wis.

John E. Kieffer, founder and treasurer of the Kieffer Paper Mills, Ewing, Ind., died on September 16 when the car which he was driving was hit by the B & O National Limited at the crossing at the depot in Brownstown.

Robert G. Livermore, 70, of Ware, Mass., former superintendent of the Ware plant of McLaurin-Jones Co., died in Wesson Memorial Hospital, Springfield, on September 20. He became superintendent of the Ware plant when it started operations in 1918. His nephew, Henry L. Mellen, is assistant manager of the Paper Makers Chemical Dept of Hercules Powder Co., Holyoke, Mass.

William McCarthy, a state forest ranger for fifteen years until his retirement in 1946, died at Lowville, N. Y., on September 19. Well known as a hunter and fisherman, he had been employed by the Gould Paper Co. as a pulpwood buyer since leaving the state service.

Samuel A. Morman, 92, one of the founders of the American Box Board Co., died at Grand Rapids, Mich., on September 21. Survivors include his widow, Mary D.; two daughters and a sister.

Hugh H. Powell of the Oakland office of Oliver United Filters, Inc., died at his home in Castro Valley, Calif., on August 31 after a short illness. Mr. Powell joined the company in 1919 and served in various capacities until 1943 when he took charge of the personnel work at the Oakland plant and office. In 1947 he was placed in charge of all personnel work for the company under the title Personnel Relations Director covering the three district sales offices and the two factories at Oakland, and Hazleton, Pa. He is survived by his widow, a brother and four sisters.

FOR SALE
WESTINGHOUSE PAPER MACHINE DRIVE
New—Carefully Stored—1947-48 Prices

Consisting of:

Motorized Sections
Motor Generator Set
Starting Generator
Exciter Set
Speed Regulators
Gear Units
Blower Motors
Auxiliary Motor Controls
AC & DC Control Panel Board

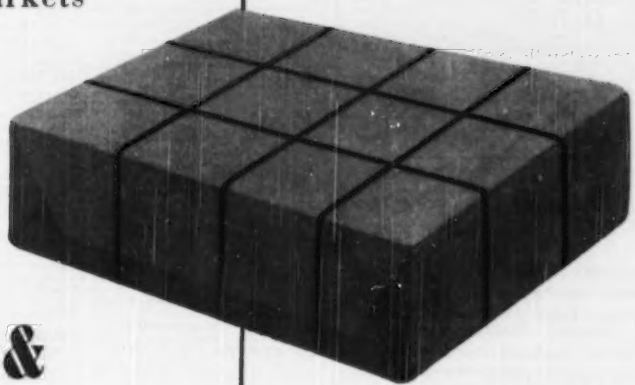
Must dispose all as a Unit immediately

Box No. 50-470, care Paper Trade Journal.

S-28

Lyddon & Co.

exporters of wood pulp
to all world markets



Parsons & Whittemore

paper exporters
wood pulp

London
Paris
Zurich
Stockholm
Oslo
Sousse
Montreal
Buenos Aires
Sao Paulo

10 East 40th Street, New York 16, N.Y.

CLEARING HOUSE

HELP WANTED

MEN WANTED
POSITIONS OPEN

We can place—resident manager newsprint paper mill (Canada); superintendent Cylinder machine specialty mill (Canada); managers, supts., asst. supts. for asbestos cement, paper converting and printing plants, book, bond, ledger, offset paper and roofing felt mills in the United States.

Master mechanics, mechanical engineers, draftsmen, planning and designing engineers and millwright-foreman, salaries $4,000 to $10,000; mechanical or chemical engineering graduate with paper mill experience to sell paper mill equipment; paper salesman for New England territory; cost accountant; chemists, chemical engineers and laboratory men; beater engineers; machine tenders and back tenders.

We invite correspondence (confidential) with executives seeking positions and with employers seeking new personnel.

CHARLES P. RAYMOND SERVICE, Inc.
294 Washington Street, Boston, Mass.
S-28

MIAMI PAPER BOARD MILLS, INC.

P. O. Box 97, Int'l. Airport, Miami, Fla. having recently resumed production with almost a brand new mill has opening for *1 MACHINE TENDER* and *1 BACK TENDER*. Applicants must be thoroughly experienced on folding boards and must furnish A-1 references.

Steady work—unusually high pay.

O-5

TECHNICAL SALESMAN
PAPER CONVERTING MACHINERY

Experienced man wanted for responsible sales engineering position for special paper converting machinery. Principal equipment being winders, coating machinery, embossers, laminators etc. All replies strictly confidential. Location in upstate New York.

Box No. 50-469 care Paper Trade Journal. O-19

SUPERINTENDENT 25 YEARS OF PRACTICAL EXPERIENCE

on Cylinders and Fourdriniers manufacturing the following grades: book, writing, bond, ledgers, offset, coating, kraft of all kinds, manilas, drinking cup, index, bristol, envelope, tag board, folding box board, tabulating and surface sizing. Can get quality and production. Best of references.

Box 50-462, care The Paper Trade Journal. O-19

PRODUCTION CHIEF

Paper converting, nationally known. Printing, coating, gumming, laminating, finishing operations. Lifetime position for top-flight production executive. Our people know of this ad. Send full details confidentially to President, Box 50-443, care Paper Trade Journal. TF

WANTED—Machine Tenders, Back Tenders, Cylinder machines. STOCKPORT PAPER CORPORATION, Stockport, New York. O-12

HELP WANTED

SALARIED POSITIONS $3,500—$35,000

If you are considering a new connection communicate with the undersigned. We offer the original personal employment service (40 years recognized standing and reputation). The procedure, of highest ethical standards, is individualized to your personal requirements and develops overtures without initiative on your part. Your identity covered and present position protected. Send only name and address for details.

R. W. BIXBY, INC.
117 Dun Bldg., Buffalo 2, N. Y.
TF

WANTED—Experienced Welder for Board Mill. Only men interested in a permanent position with a growing concern need apply. Good working conditions and good hourly rate. Address Box 50-429 care Paper Trade Journal. S-28

OPERATOR and SUPERVISOR Hamblet Sheeter, Seybold Cutter, Cameron Slitter. Small plant, Brooklyn. Send full details. Address Box 50-458 care Paper Trade Journal. S-28

WANTED—Superintendent for mill making specialties. Must be experienced and versatile. State age, experience and references. Address Box 50-454 car Paper Trade Journal. S-28

EXPERIENCED PAPER MILL ENGINEER, with knowledge of general engineering work in consulting engineer's office, specializing in pulp and paper mills. Excellent opportunity for right man. State complete details, age, experience, availability and salary desired. Address Box 50-442 care Paper Trade Journal. S-28

BEATER ENGINEER AND MACHINE TENDER—Southern mill manufacturing folding and set-up boards. Good pay for thoroughly experienced man. Address Box 50-409 care Paper Trade Journal. S-28

BACK TENDER—thoroughly experienced on all folding boards. Unusually high weekly salary, secure future. Outline full background and personal data in first letter. Mill located in South. Address Box 50-451 care Paper Trade Journal. O-12

TOUR BOSS for one machine board mill in New York State. Must be thoroughly experienced on high grade folding box boards. Please submit references in first letter stating experience, age, etc. Address Box 50-457 care Paper Trade Journal. O-12

SUPERINTENDENT AND GENERAL MANAGER for Southern Folding Board Mill. Must be thoroughly experienced, quality and maintenance conscious and possess executive ability to supervise purchasing and cost controls. Excellent compensation—secure future. Address Box 50-408 care Paper Trade Journal. S-28

MACHINE TENDER—Tissue. Experienced on Fourdrinier pick up. Steady, excellent pay and working conditions. Southeast. Address Box 50-463 care Paper Trade Journal. S-28

WANTED BY PAPER MILL in Mid-West: Back Tenders or experienced third hands willing to learn Back-Tender's job. Also Machine Tenders, or Back Tenders willing to learn Machine Tender's job. Address Box 50-465 care Paper Trade Journal. O-19

TOUR BOSS wanted for Board Mill in East. Must have experience on folding grades. Address Box 50-473 care Paper Trade Journal. TF

WORKING SUPERINTENDENT for small, fast growing Eastern mill making lightweight specialties. Cylinder machine experience essential. State qualifications and salary expected. Address Box 50-378 care Paper Trade Journal. TF

WANTED—Master Mechanic thoroughly familiar with Board Mill operation. Excellent opportunity for right man. Please give full particulars in first letter. Address Box 50-428 care Paper Trade Journal. S-28

SITUATIONS WANTED

POSITION WANTED
EXECUTIVE—ENGINEER

available for immediate position in mill where low costs and high production are desired. I do not promise results—I give results. First class references.

Address Paper Trade Journal. Box #50-460. O-5

EXECUTIVE ACCOUNTANT

Capable organizational and supervisory ability. 20 years administrative experience in folding carton, paperboard and printing industry. Available immediately. Box 50-440 care Paper Trade Journal. O-19

PLANT MANAGER—Board and Paper Conversion; employed; seeks opportunity in company needing cost-minded executive with proven production record and excellent labor relations history. Address Box 50-385 care Paper Trade Journal. S-28

EXPERIENCED
KRAFT PULP AND PAPER MILL ENGINEER AND OPERATOR

wants to contact mills.

Cement Sacks, Gumming, Envelopes and other Specialties.

Address Box 50-439 care Paper Trade Journal. N-2

SALES EXECUTIVE — 48, Member T.A.P.P.I., S.A.P.I., wide acquaintance with publishers, Converters, Merchants, Printers. Experienced Book, Bond, Coated, Groundwood, Sulphate. Capable manager. Personable. Aggressive. Available October 15. Address Box 50-404 care Paper Trade Journal. TF

CHEMIST—Now employed. Thoroughly experienced paper converting, packaging problems, adhesives, coatings, plastics. Young woman, single, desires opportunity with progressive firm interested in development work. Address Box 50-471 care Paper Trade Journal. S-28

FOR SALE

FOR SALE

100" Horne single knife Sheeter with back-stand.
64" Hamblet Sheeter with Layboy and back-stand.
58" Finley Sheeter.
36" Hamblet Sheeter.
74" Beloit 2-drum Rewinder.
48" Kidder model CH Slitter.
32" Cameron model 24-3A Slitter.
2—Three-color Rotary Printing Presses, 60" wide.
Cottrell 3-color Bag Press.
Flat Cutters, 32", 38", and 44" Power Machines.

Also many good values in Printing, Newspaper & Lithographing Equipment.

THOMAS W. HALL COMPANY, Inc.
120 West 42nd St., N. Y. 18
(Plant at Stamford, Conn.) TF

ROSS PAPER MACHINERY CO.

265 PASSAIC STREET
NEWARK 4, N. J.

CONVERTING PAPER MAKING EQUIPMENT — NEW, USED, REBUILT PAPER AND PULP MACHINERY

CABLE ADDRESS: JACROSS

MACHINERY WANTED

For outright purchase—

Paper Machines, Paper Mill Machinery and Converting Equipment.

AMERICA'S LARGEST BUYERS OF PAPER MAKING MACHINERY

ANILINE PRESS

1—Lockport 4 color Aniline Press.

BEATERS

1—Dayton High Speed—iron tub—60 tons per day.

BELTING—NEW

87 feet 8" 13 ply Goodyear Rubber Belting.
553 feet 8" 4 ply Silver Duck Transmission belt.
177 feet 10" 6 ply Silver Duck Transmission Belt.

BLOWERS

9—Blowers and Mill Exhausters.

CALENDER ROLLS

46 Chilled Iron Rolls—Assorted sizes.

CALENDER STACKS

1—112" face 7 roll.

CONVEYOR

1—18½ ft. long x 30" wide—with motor.

CORE CUTTERS

1—Cameron with 1" x 1½" mandrels.

CYLINDER MOLDS

1—134" face x 36" diameter, with stainless steel shafts.
1—74" face x 36" diameter.

DRYERS

5—143" face x 48" diameter.
5—124" face x 48" diameter.
5—80" face x 36" diameter.
1—77" face x 48" diameter—with gear.
1—64" face x 36" diameter.
1—120" face x 16" diameter—Baby Dryer.
56—126" face x 42" diameter.
4—90" face x 36" diameter.
1—102" face x 48" diameter, with bearings.
1—94" face x 48" diameter—with gears and bearings.
3—100" face x 48" diameter—with gears and bearings.
3—110" face x 42" diameter with bearings and gears.
1—117" face x 48" diameter.
1—54" face x 36" diameter.

ELECTRIC PAPER MACHINE DRIVES

1—G. E. 55/110 with G. E. Generator, Exciter and Controller.
1—G. E. 80/100 with G. E. Generator, Exciter and Controller.

FLAT SCREENS

1—Beloit—4 plate.

FOURDRINIER SECTIONS

1—P & J 156" x 80 ft. ball bearing. Complete from Inlet to 22" diameter suction couch. Brass and Rubber covered table rolls. 6 Brass Suction Boxes operated at 1000' per minute.

HYDRAFINER

1—Ditts Hydrafiner with anti-friction bearings—200 h.p. motor.

INLETS

1—96" All bronze—adjustable.

JORDANS

1—#3 Miami, for motor drive.
3—Jones Majestics with base and couplings—
2—#3 Appleton with base and coupling.
1—Dillon Horne. Stainless steel ½" filling.
1— Jones Majestic. Stainless Steel Filling.

MOTORS

1—Reliance 25 h.p. ball bearing, 550 v., 3 phase. 60 cycle—1750 r.p.m.

PULLEYS

30—Split cast iron tapered Pulleys.

PULP EQUIPMENT

1—Mitts & Merrill #17 Pulpwood chipper.
1—96" Murray 4 knife ball bearing Chipper, with 150 h.p. synchronous motor.

PUMPS

44—Centrifugal Pumps, open & closed impellers. Direct connected or Belt Driven. Extended base for motor. Assorted capacities and heads. Most used less than one year. Also new Goulds Pumps.
1—Worthington Sump Pump—75 g.p.m. 60' head with General Electric 2 h.p. 220-440 v. motor.
1—Worthington Sump Pump—1500 g.p.m. 15' head with General Electric 7½ h.p. 220-440 v. motor.

REDUCERS

1—Link Belt 40 h.p. Ratio 2.2-1. 500 r.p.m.-227 r.p.m.
1—Falk 25 h.p. Ratio 300-1. 900 r.p.m.-3 r.p.m.

REELS

1—Beloit 110" two bowl Reel.
1—Beloit 132" two bowl upright reel.
1—Beloit 116" two bowl upright reel.

ROLLS—PRESS, COUCH, etc.

32—Press rolls, brass and rubber covered.
14—Couch rolls, brass and rubber covered.
250—Brass and steel carrying rolls.

ROTARY SCREENS

1—#2 Leith-walk-ball bearing.
2—#2A Bird with Copper vats, enclosed drive.

SCREW PRESSES

1—Valley Voith Screw Press Size 2A, with new spare sets of plates.

SHEETERS

1—Hamblet 62" single knife with 8 roll backstand and 4 slitters.
1—Fintay 90" with 6 roll back stand, motor and 4 slitters.
1—42" Dillon with 8 roll backstand.
1—48" Kidder Spot Sheeter.

SHREDDERS

1—American 37" Hamermill, anti-friction bearing.
1—Sprout Waldron Cutter—type F-11—30" knives. Used 30 days.

SLITTERS AND WINDERS

2—Pusey & Jones 160" high speed slitters and rewinders.
2—Langston 40" with motor and 25 sets shear cut slitters.
1—Langston 56" with 15 sets shear cut slitters.
1—Cameron 72" Model 6 36" rewind—20 knives.

STUFF PUMPS

1—Shartle 8½x12 Triplex—Silent Chain Drive.
1—Shartle 10 x 20 Triplex.

SUCTION COUCH ROLLS

1—Millspaugh 22" diameter x 138⅝" suction face.
1—Millspaugh 22" diameter x 158" drilled face.
1—Millspaugh 95" drilled face x 22" diameter.
1—Beloit 84" face x 18" diameter—ball bearing.

SUCTION PRESS ROLLS

1—Millspaugh 134" drilled face x 22" diameter with stand & drive.

SUPERCALENDERS

1—66" Perkins 7 roll—with all electric equipment.

THICKENERS

1—89" Thickener—new wood vat.
1—Bird Thickener Iron End Vats—Cylinder 72" face x 42" diameter, with Shower and Belt take off roll.
1—84" Thickener—iron end vat—rubber couch. Gear head motor drive.

TRIMMERS

1—62" Oswego.

VATS—STAINLESS STEEL

2—Dual Flow Stainless Steel vats for cylinders 40" diameter x 153" face—with stands for couches.

VACUUM PUMPS

1—Nash L-3.

WET MACHINES

1—84" Wet machine—new vat.

FOR SALE

CAMERON REWINDER 70" width with slitter attachment—$3000.00.
36" BECK—$2000.00.

S. B. BEHRENS & COMPANY
119 Onderdonk Ave., Brooklyn 6, N. Y.
Tel. EVergreen 6-0505
O-5NC

FOR SALE—2 used 46-inch Waldron 6-brush coating units with complete festoon drying system and reelers. Good condition. Price reasonable. Address Box 50-253 care Paper Trade Journal. TF

PAPER COATING MACHINERY MANUFACTURERS—Waxing, Oiling, Carbon, Laboratory Coating and Treating and Flat Ream Measuring and Converting Machines. New improvement. THE MAYER MACHINE COMPANY, INC., 1313 Buffalo Road, Rochester, 11, N. Y. TF

FOR SALE—Offer 5 tons best quality C. P. Molybdate Orange 41c lb.; also other colors. BUNGE PULP & PAPER COMPANY, 45 West 45th Street, New York, 19. O-5

Classified Advertising Brings Results

FOR SALE

78" Norwood 8-roll Stack of Super Calendars. Complete with 100 HP Variable Speed Motor and Drive. Capable of speeds up to 850 feet per minute.

GIBBS-BROWER COMPANY, INC.
21 East 40th Street
New York 16, N. Y. S-28

FOR SALE—1—62" No. 6 Cameron Slitter; 1—42" No. 6 Cameron Slitter; 2—Smith & Winchester 56" ream cutters; 2—56" Platers. FRANK H. DAVIS COMPANY, 175 Richdale Ave., Cambridge, Mass. S-28

SWENSON
REG. U.S. PAT. OFF.
Evaporators, Pulp Washers, Filters, and other Pulp Mill Equipment. Write for Bulletins.
SWENSON EVAPORATOR CO. 15687 Lathrop Ave., Harvey, Ill.

THE CARTHAGE MACHINE COMPANY
CARTHAGE, NEW YORK
Manufacturer of
Machinery and Equipment for Mechanical and Chemical Pulp Mills and Special Machinery

FOR SALE

CAMERON SLITTERS

1—84" Type 10—Model 14. Late Type.

1—62" Type 9-S.

1—72" Type 9-S.

1—62" Shear cut, Type 6.

1—62" Type 6.

1—50" Shear Cut, Type 28, Model 3d.

1—42" Universal Type 6.

1—42" Type 26, Model 2A.

1—32" Type 40, Model 2A.

1—65" Kidder Late Type Super Speed Junior Model Shear Cut Slitter & Rewinder.

1—62" Waldron Shear Cut Slitter & Rewinder.

1—42" Johnstone Twelve Slitter & Rewinder.

1—Brand New 82" Johnstone Fourteen.

1—30" Fales Standard Model B Slitter & Rewinder.

POWER PAPER CUTTERS:

5—Seybold. 1—40" 10Z, 1—54" Holyoke, 1—54" 20th Century, 1—60" 20th Century, 1—72" 20th Century. 3—Oswego, 44", 50" and 57". 2 Sheridan, 1—50", 1—65". 2—Acme, 32" and 42". 1—S&W Undercut, 63".

1—Hudson-Sharp 3 deck 10 x 10 Napkin Folding Machine. ¼, ⅛ & ⅓ Fold.

1—McCade Mfg. Co.'s facial tissue paper folding machine with AC motor. Production 40 to 50 gross in 8 hours. 400 count. 8" x 10".

2—81" Dietz Toilet Paper Perforators. Sheets 4½ x 4½ and 4½ x 5 and paper towels perforated 7½ and 13½".

1—81" Hudson Sharp Toilet Perforator.

1—Paper Converting Machine Co. ¼ fold, 2 web napkin folder with embossing attachment, Extra Embossing rolls.

1—Pickett Garment Bag Machine, making bags 36" and 54".

3—Potdevin Bag machines with two color printing units. 1—Type 293, size 9693-303, flat and square bags. 4—Type 212 Size 9112-301, satchel bottom and flat bags, 2—Type 91 F&S Size 1, Flat and square bags.

1—32" 3-color Aniline Printing Press for tailprinter on a Bag Machine.

2—Duplex Sheeters, 1—64" Dillon and 1—94" Moore & White.

1—94" Dillion Duplex Rotary Sheet Cutter, with 24 roll back-stand and Brannan Ream Folder.

1—52" Hamblet Single Rotary Sheet Cutter.

1—36" Standard Beck Rotary Sheeter.

1—81" Hudson-Sharp Embossing Machine.

1—45" German Dornbusch Embossing machine with two sets of embossing rolls.

1—72" & 1—84" Miami Lo-Type Waxing Machines.

1—80" Potdevin Waxing Machine. Model 79.

2—46" Waldron Brush Coating Machines complete with drying ovens, festoon equipment, rack and so forth.

1—Lawtomatic Wrapping Machine for 11" Paper Towels.

1—#3A Hudson-Sharp Rotary Aniline Printing Press, roll to sheets, 18½" wide. Variation in sheet lengths 24" to 28".

3—Noble & Wood Mammoth Jr. Jordans, AC motors, direct connected.

GIBBS-BROWER COMPANY, INC.

Reply to Room 903

21 East 40th St., New York 16, N. Y.

S-28

FOR SALE

PRESSES:

2—Presses 18" x 108" complete with frames, felt rolls, etc.
1—27" x 148" face, 1" New Rubber Pressure Roll.
1—24" x 134" face R. C. Pressure Roll with 2½" steel shell.
1—19¾" x 97" face Brass Press Roll with anti-friction bearings.
1—17" x 78" face Rubber Covered Press Roll, 1" Good Rubber.
5—19½ x 120" Rubber Covered Rolls
5—14" x 120" Rubber Covered Rolls
6—11½ x 120" Rubber Covered Rolls

CALENDER:

1—87" Seven Roll Stack. Heavy Duty

DRYERS:

5—48" x 160" Pusey & Jones Dryers
1—36" x 90" Bagley & Sewall Dryer
2—36" x 90" Pusey & Jones Dryers
1—36" x 86" Dryer
1—49" x 125" Dryer

CYLINDERS:

1—36" x 92" Cylinder Mould. Cast Iron End Vat. Anti-friction Bearings.
2—36" x 136" Hollow Shaft Cylinder Moulds
1—36" x 74" Solid Shaft
1—Agnew Washer, 36" x 48". Timken Bearings
1—36" x 74" Solid Shaft Cylinder Moulds

COUCH ROLLS:

1—26" x 134" Grooved Brass Bottom Couch
1—22" x 134" Brass Top Couch
1—16" x 136" Brass Bottom Couch
1—18" x 90" Rubber Covered Couch
1—14" x 96" Rubber Covered Couch
1—20" x 87" R. C. with 1¼" Rubber

SCREENS:

2—No. 2 Bird with copper vats
1—Packer 12 Plate Screen
4—Appleton 12 Plate Screen Plates cut .028.
2—Bagley & Sewall 4 Plate Tailing Screens
1—Impco Knotter Screen

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1—Noble & Wood Mammoth Jr. Jordan with anti-friction thrust bearing. Base for direct connecting.
1—Emerson No. 3 Jordan with Bronze Fittings.
1—Sturtevant Bale Pulper, anti-friction Brgs. Complete with conveyer & Speed Reducer.
1—E. D. Jones Majestic Jordan.

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1—Shartle 80" x 55". 100 T. Breaker Beater.
1—Ditts Bandless 50" x 48" Face.
1—E. D. Jones 65" x 52" Face.
1—E. D. Jones 32" x 52" Face.
2—Jones 50" x 44" Face.

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1—Nash 3 Hyter Pump.
1—Nash 1 Hyter Pump.
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STOCK PUMP:

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2—Black Clawson 8" x 16" Triplex Stock.
1—Moore & White 8" x 12" Triplex Stock.

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1—4" x 3" High Pressure Gould Water Pump.
1—12" x 8" Gould Stock Pump, 1800 GPM, 100' head.
1—Deming Sump Pump direct connected to Motor 75 GPM @ 45' head.
1—Domestic 4 x 4 Sludge or Heavy Density Stock Pump, 200 GPM @ 50'.

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1—10" x 134" Downingtown Suction Bell Roll.
13—Brass Suction Boxes from 74"-154".

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1—Smith & Winchester No. 56 Undercut Trimmer.
1—Beloit Duplex Sheet Cutter 102" with Duplex Slitting Equipment.
1—M. & W. 102" Layboy 4 Pile, 3 suction.

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1—Ingersoll Rand ERI 10 x 10 Air Compressor.
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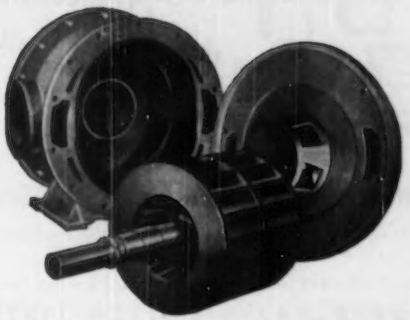

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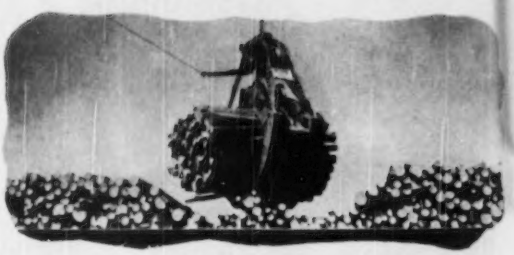

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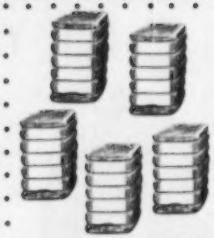

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WHERE TO BUY

FELT CLEANERS
Calgon, Inc.
Cowles Chemical Co.
General Dyestuff Corp.
Nopco Chemical Co.

FELT CONDITIONERS
Bird Machine Co.
The Sandy Hill Iron & Brass Works

FELT GUIDES
Black Clawson Company
Frank W. Egan & Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

FILLERS
American Cyanamid Company, Industrial Chemicals Division
A. M. Meincke & Son, Inc.
Vanderbilt Co., R. T.
Wyandotte Chemicals Corp., Michigan Alkali Div.

FILTERS
Bird Machine Company
Green Bay Fdy. & Mch. Co.
Hardinge Company, Inc.
J. M. Huber Corp.
Hungerford & Terry, Inc.
Johnson Corp.
Moore & White Co.
J. O. Ross Engrg. Corp.
The Sandy Hill Iron & Brass Works
Walworth Company

FITTINGS
Crane Company
Shartle Bros. Mch. Co.
Walworth Company

FLEXIBLE COUPLINGS
John Waldron Corp.

FLOORING, GRATING AND TREADS
The Goodyear Tire & Rubber Company
Norton Co.

FLOW BOXES, STAINLESS-CLAD
Lukens Steel Co.
The Sandy Hill Iron & Brass Works

FORK LIFT TRUCKS
Towmotor Corp.

FORMATION
Thwing-Albert Instrument Co.

FORMING MACHINES
Black Clawson Company
Downingtown Mfg. Co.
The Moore & White Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

FREENESS TESTERS
Testing Machines, Inc.

GASKETS
The Goodyear Tire & Rubber Company

GEARS
Black Clawson Company
De Laval Steam Turbine Co.
Downingtown Mfg. Co.
Frank W. Egan & Co.
Farrel-Birmingham Co.
E. D. Jones & Sons Co.
Link Belt Company
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Westinghouse Electric Corp.
Western Gear Works

GRINDERS
Bridgeport Safety Emery Wheel Company
Carthage Machine Co.
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Lobdell Co.
Norton Company
Samuel C. Rogers and Company
The Sandy Hill Iron & Brass Works

GRINDING WHEELS
Norton Company

GUIDES, WEB
The Moore & White Co.
Mount Hope Machinery Co.
Bound Brook Engrg. Co.
John Waldron Corp.

GUMMING MACHINES
Dilts Machine Works
The Sandy Hill Iron & Brass Works

GUMS
National Starch Products, Inc.
Stein-Hall Co., Inc.

HEADS
Babcock & Wilcox Co.
Lukens Steel Company

HEAT EXCHANGERS AND RECOVERY SYSTEMS
Davis Engrg. Corp.
Stickle Steam Specialties Co.
Westinghouse Electric Corp.

HEATING, VENTILATING & AIR CONDITIONING
The Appleton Machine Co.
Davis Engrg. Corp.
E. D. Jones & Sons Co.
General Electric Co.
Leeds & Northrup
D. J. Murray Mfg. Co.
Red-Ray Mfg. Co., Inc.
Ross Engineering Corp., J. O.
Stickle Steam Specialties Co.
Valley Iron Works Co.
Westinghouse Electric Corp.

HOSE (Air, Water, Suction, etc.)
The Goodyear Tire & Rubber Company

HUMECTANTS
Aktivin Division, Heyden Chemical Corp.
Nopco Chemical Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

IMPREGNANTS
American Cyanamid Company Industrial Chemicals Division
B. F. Goodrich Chemical Co.

INDENTING MACHINES
Dilts Machine Works

INDUSTRIAL TRACTORS
Towmotor Corp.

INKOMETER
Thwing-Albert Instrument Co.

INSTRUMENTS, TESTING AND MEASURING
Bauer Brothers Co.
Beckman Instruments, Inc.
Bunge Pulp & Paper Co.
N. P. Bowsher
General Electric Company
W. & L. E. Gurley
National Technical Laboratories
B. F. Perkins & Son
Photovolt Corp.
Taylor Instrument Cos.
Testing Machines, Inc.
Thwing-Albert Instrument Co.

JOINTS
Johnson Corp.
Shartle Bros. Mch. Co.

JORDAN FILLINGS
Appleton Machine Co.
Bahr Brothers Mfg. Co.
E. D. Jones & Sons Co.
Shartle Bros. Mch. Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

KNIVES
Black Clawson Company
Dilts Machine Works, Inc.
Hamblet Machine Co.
Heppenstall Company
E. D. Jones & Sons Co.
The Moore & White Co.
Taylor Stiles & Co.
Valley Iron Works Co.

KNOT BORING MACHINES
DeZurik Shower Company

KRAFT WRAPPING PAPERS
Canadian Newsprint Supply Co.

LABORATORY CORRUGATOR
Thwing-Albert Instrument Co.

LABORATORY EQUIPMENT
Appleton Machine Co.
Bauer Brothers Co.
Beckman Instruments, Inc.
Bird Machine Company
Dilts Machine Works
W. & L. E. Gurley
E. D. Jones & Sons Co.
Leeds & Northrup Company
National Technical Laboratories

Taylor Instrument Companies
Testing Machines, Inc.
Valley Iron Works Co.
John Waldron Corp.

LAMINATING COMPOUND
National Wax Company

LAMINATING MACHINES
Dilts Machine Works
John Waldron Corp.

LAY BOYS
Dilts Machine Works
Gibbs-Brower Company, Inc.
Hamblet Machine Co.
Moore & White Co.

LINTER COTTON
Railway Supply & Mfg. Co.

LUBRICANTS
Sinclair Refining Co.
Socony-Vacuum Oil Co.
Sun Oil Company
The Texas Company
Tide Water Associated Oil Co.

MAGAZINE REELS
Dilts Machine Works (Kohler Systems)

MATERIALS HANDLING
Cleveland Crane & Engrg. Co.
Dilts Machine Works
Industrial Brownhoist
Shartle Bros. Mch. Co.
The Wellman Engrg. Co.

MICROMETERS & CALIPERS
Farrel-Birmingham Co.
Lobdell Co.
Testing Machines, Inc.

MICRO-CRYSTALLINE WAXES
Bunge Pulp & Paper Co.
Moore & Munger
National Wax Company

MOISTURE CONTENT CONTROL
Stickle Steam Specialties Co.

MOTORS AND GENERATORS
Allis-Chalmers Mfg. Co.
Fairbanks, Morse & Co.
General Electric Company
Reliance Electric & Engrg. Co.

NEWSPRINT
Bunge Pulp & Paper Co.
Canadian Newsprint Supply Co.

NICKEL AND NICKEL ALLOYS
The International Nickel Co.

NOZZLES
Link Belt Company

PACKING BOXES
Johnson Corporation
The Moore & White Co.
Shartle Brothers Machine Co.

PAPER CONDITIONING
Vapo Systems Co.

PAPER MACHINE DRIVES
Manchester Machine Co.

PAPER MACHINES
Bagley & Sewall Co.
Black Clawson Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Lukenweld
Moore & White Co.
Pusey & Jones Corp.
J. J. Rosa Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

PAPER MACHINE SLICES
Black Clawson Company
E. D. Jones & Sons Co.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Valley Iron Works Co.

PAPER TUBE MACHINERY
Dietz Machine Works
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson Sharp Machine Co.
Langston Co., Samuel M.

PARAFFINE WAXES
Moore & Munger
National Wax Company

PARAFFIN WAX EMULSIONS
Nopco Chemical Co.

PASTING MACHINES
Black Clawson Company
Dilts Machine Wks.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Murray, D. J., Mfg. Co.
Moore & White Co.
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

PEBBLE MILLS
F. L. Smidth & Co.

PERFORATED METAL
Allis-Chalmers Mfg. Co.

PETROLATUMS
National Wax Company

pH METERS
Thwing-Albert Instrument Co.

PIPE
Armco Drainage & Metal Products, Inc.
Babcock & Wilcox Co.
Crane Company
Michigan Steel Casting Co.
National Tube Co.
Walworth Company

PIPE FITTINGS
Armco Drainage & Metal Products, Inc.
Crane Company
Michigan Steel Casting Co.
Walworth Co.

PIPE MARKERS
W. H. Brady Co.

PITCH CONTROL
American Cyanamid Company Industrial Chemicals Division
General Dyestuff Corp.
Monsanto Chemical Company
National Aluminate Corp.
Nopco Chemical Co.
Rohm & Haas Co.

PLASTICIZERS
American Cyanamid Company Industrial Chemicals Division
Aktivin Division, Heyden Chemical Corp.
B. F. Goodrich Chemical Co.
Nopco Chemical Co.

PLATERS
Gibbs-Brower Company, Inc.
Perkins & Son, Inc., B. F.

PLATES
Armco Steel Corp.
Babcock & Wilcox Co.
J. O. Ross Engrg. Corp.
Lukenweld Division
Lukens Steel Company
Timken Roller Bearing Co.

PLUGS
The Appleton Machine Co.
Black Clawson Company
E. D. Jones & Sons Co.
Shartle Brothers Machine Co.

POPE TYPE REELS
Manchester Machine Co.

PRECISION SAMPLE CUTTER
Testing Machines, Inc.
Thwing-Albert Instrument Co.

PRESERVATIVES
E. I. du Pont de Nemours & Co
General Dyestuff Corp.

PRESSURE VESSELS STEEL AND ALLOY
Babcock & Wilcox Co.

PRESSURE VESSELS
Chicago Bridge & Iron Co.

PRESSES
Black Clawson Company
Dietz Machine Works
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson-Sharp Machine Co.
The Moore & White Co.
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.
Waldron Corp., John
H. G. Weber & Co., Inc.
Williams Apparatus Co.

PULP CLASSIFIER
The Bauer Bros. Co.
Thwing-Albert Instrument Co.

PULP CLEANERS
Corp.
Nichols Engrg. & Research

PULP STOCK VALVES
Crane Company
Record Fdy. & Mach. Co.
Shartle Brothers Machine Co.

PULPERS
American Paper Machy. & Engrs Works, Inc.

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WHERE TO BUY

Bauer Brothers Co.
Dilts Machine Works
E. D. Jones & Sons Co.
Shartle Brothers Machine Co.

PULPS
Brown Company
Bunge Pulp & Paper Co.
Gottesman & Co., Inc.
Lyddon & Co. (America), Inc
Parsons & Whittemore, Inc.
Perkins-Goodwin Co.
Price & Pierce, Ltd.
Pulp and Paper Trading Co.
Rustigeuche Co., Ltd.

PULPSTONES
Norton Company

PULP TESTERS
Paper and Pulp Testing Laboratories

PULVERIZING MILLS
F. L. Smidth & Co.

PUMPS
American Paper Machy. & Engrg. Works, Inc.
Allis-Chalmers Mfg. Co.
Black Clawson Company
DeLaval Steam Turbine Co.
Dorr Company
Downingtown Mfg. Co.
Fairbanks, Morse & Co.
Gibbs-Brower Company, Inc.
Johnson Corp.
Moore & White Co.
Nash Engineering Co.
Roots Connersville Blower Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

RADIANT BURNERS
Red-Ray Mfg. Co., Inc.

RAG COOKING PROCESSES
The Kinsley Chemical Company
General Dyestuff Corp.
Rohm & Haas Co.

RAG CUTTERS
Gibbs-Brower Company, Inc.
B. F. Perkins & Son, Inc.
Taylor-Stiles & Co.

RECAUSTICIZING PLANTS
The Dorr Company

RECOVERY SYSTEMS
Babcock & Wilcox Co.
Chicago Bridge & Iron Co.
Rodney Hunt Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Pusey & Jones Corp.
Ross Engineering Corp., J. O.
Valley Iron Works Co.

REELS
The Appleton Machine Co.
Black Clawson Company
Dilts Machine Works (Kohler Systems)
Downingtown Mfg. Co.
Hudson Sharp Machine Co.
Moore & White Co.
Rodney Hunt Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
The Smith & Winchester Mfg. Co.

REFINERS
Appleton Machine Co.
Bahr Brothers Mfg. Co.
Bauer Brothers Co.
Dilts Machine Works
Gibbs-Brower Company, Inc.
Anton J. Haug
E. D. Jones & Sons Co.
Morden Machines Co.
Murray, D. J., Mfg. Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Sutherland Refiner Corp.
Valley Iron Works

REGULATORS
American Paper Machy. & Engrg. Works, Inc.
Allis-Chalmers Mfg. Co.
Armstrong Machine Works
Bird Machine Company
DeZurik Shower Company
General Electric Co.
Johnson Corp.
Leeds & Northrup Company
National Technical Laboratories
Shartle Brothers Machine Co.
Stickle Steam Specialties Co.
Taylor Instrument Companies
Wallace & Tiernan

RESINS
American Cyanamid Company, Plastics & Resins Division
The Dow Chemical Company
B. F. Goodrich Chemical Co.
The Goodyear Tire & Rubber Company
Hercules Powder Co.
Monsanto Chemical Company
Nopco Chemical Co.
Rohm & Haas Co., Resinous Products Div.

ROLLS
Appleton Machine Co.
Black Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
Frank W. Egan & Co.
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Lobdell Co.
The Moore & White Co.
D. J. Murray Mfg. Co.
Perkins, B. F., & Sons Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Co.
Rodney Hunt Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
U. S. Rubber Co.
Valley Iron Works Co.
Waldron Corp., John
Wheeler Roll Co.

ROLL COVERS
The Goodyear Tire & Rubber Company
Stowe-Woodward, Inc.

ROLL HANDLING EQUIPMENT
Dilts Machine Works (Kohler Systems)

ROLL STANDS
Cameron Machine Co.
Dilts Machine Works (Kohler Systems)
Frank W. Egan & Co.
Moore & White Co.
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
John Waldron Corp.
H. G. Weber & Co., Inc.

ROPE CARRIERS
Black Clawson Co.
The Moore & White Co.
The Sandy Hill Iron & Brass Works

ROTARY KILNS
F. L. Smidth & Co.

ROTARY STEAM JOINTS
Johnson Corp.
The Moore & White Co.
Shartle Bros. Mch. Co.

RUBBER PRODUCTS
The Goodyear Tire & Rubber Company

SATURANTS
B. F. Goodrich Chemical Co.

SATURATING MACHINES
Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Moore & White Co.
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman G.

SAVEALLS
Bird Machine Company
Chicago Bridge & Iron Co.
Green Bay Fdy. & Mch. Wks.
Hardinge Company

SCALES
Fairbanks, Morse & Co.
Merrick Scale Mfg. Co.
Testing Machines, Inc.

SCREEN PLATES
Bird Machine Company
Fitchburg Screen Plate Co.
Magnus Metal Corp.
Morey Paper Mill Supply Co.
Testing Machines, Inc.

SCREENS
Allis-Chalmers Mfg. Co.
Appleton Wire Works
Appleton Machine Company
Bird Machine Company
Carthage Machine Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Green Bay Fdy. & Mch. Co.
E. D. Jones & Sons Co.
Link Belt Company

Moore & White Co.
D. J. Murray Mfg. Co.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

SHEET MACHINES
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Valley Iron Works Co.

SHOWER PIPES
Bird Machine Company
DeZurik Shower Company
Downingtown Mfg. Co.
Moore & White Co.
Sandusky Fdy. & Mch. Co.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

SHREDDERS
Bauer Brothers Co.
Carthage Machine Co.
Gibbs-Brower Company, Inc.

SIZE PRESSES
Manchester Machine Co.

SIZING
American Cyanamid Company, Industrial Chemicals Division
The Dow Chemical Company
du Pont, E. I., de Nemours & Co.
Hercules Powder Co.
The Hubinger Co.
Monsanto Chemical Company
National Aluminate Corp.
Nopco Chemical Co.
Stein-Hall Co., Inc.
Wyandotte Chemicals Corp., Michigan Alkali Div.

SIZING TESTER
W. & L. E. Gurley
Testing Machines, Inc.
Thwing-Albert Instrument Co.

SLIME CONTROL
The Dow Chemical Company
E. I. du Pont de Nemours & Co.
General Dyestuff Corp.
Monsanto Chemical Co.
National Aluminate Corp.
Rohm & Haas Co.
Vanderbilt Co., R. T.
Wyandotte Chemicals Corp., Michigan Alkali Div.

SLITTERS
Black Clawson Company
Cameron Machine Co.
Carthage Machine Co.
Dietz Machine Works
Dilts Machine Works
Downingtown Mfg. Co.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co., Inc.
Hamblet Machine Co.
Hudson Sharp Machine Co.
Langston Co., Samuel M.
Moore & White Co.
D. J. Murray Mfg. Co.
Potdevin Machine Co.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

SMOKE STACKS
Chicago Bridge & Iron Co.

SOFTNESS-STIFFNESS TESTER
W. & L. E. Gurley
Testing Machines, Inc.
Thwing-Albert Instrument Co.

SOLUBLE OILS
American Cyanamid Company, Industrial Chemicals Division
General Dyestuff Corp.
Nopco Chemical Co.

SPECIAL MACHINERY
Dilts Machine Works
The Sandy Hill Iron & Brass Works
John Waldron Corp.

SPLICING TISSUE
Bunge Pulp & Paper Co.
Williams-Gray Co.

STAINLESS STEEL
Armco Steel Corp.
Michigan Steel Casting Co.
U. S. Steel Corp.

STARCH
A. M. Meincke & Son, Inc.
Clinton Foods, Inc.
The Hubinger Co.
National Starch Products Inc.
Stein-Hall Co., Inc.

STEAM JOINTS
The Moore & White Co.
Shartle Bros. Mch. Co.

STEAM SPECIALTIES
Babcock & Wilcox Co.
Combustion Engrg. Co., Inc.
Davis Engrg. Corp.
Johnson Corp.
Stickle Steam Specialties Co.

STEEL
Armco Steel Corp.
Carnegie Illinois Steel Co.
Lukens Steel Company
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
U. S. Steel Corp.

STEEL, CLAD
Babcock & Wilcox Co.
Lukens Steel Company

STEEL TANKS
Chicago Bridge & Iron Co.
The Sandy Hill Iron & Brass Works

STRETCH TESTER
Thwing-Albert Instrument Co.

STUFF CHESTS
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

SUCTION BOXES
Black Clawson Company
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

SULPHITE SPECIALTIES
Canadian Newsprint Supply Co.

SULPHUR
Texas Gulf Sulphur Co.

SULPHUR BURNERS
Valley Iron Works Co.

SULPHUR DIOXIDE
American Cyanamid Company, Calco Chemical Div.
Virginia Smelting Co.

SUPERCALENDERS
The Appleton Machine Co.
B. F. Perkins & Son, Inc.

SYNTHETIC LATICES
American Cyanamid Company Industrial Chemicals Division
B. F. Goodrich Chemical Co.
The Goodyear Tire & Rubber Company
Nopco Chemical Co.

TAKE OFF UNITS
Dilts Machine Works (Kohler Systems)

TALC
American Cyanamid Company, Industrial Chemicals Division
Vanderbilt Co., R. T.

TANKS
Chicago Bridge & Iron Co.
Kalamazoo Tank & Silo Co.
B. F. Perkins & Sons, Inc.
J. O. Ross Engrg. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

TEARING TESTERS
Thwing-Albert Instrument Co.
Testing Machines, Inc.

TENSILE TESTERS
Bunge Pulp & Paper Co.
Thwing-Albert Instrument Co.
B. F. Perkins & Son, Inc.
Testing Machines, Inc.
Nopco Chemical Co.

THICKENERS, DECKERS AND SAVEALLS
The Appleton Machine Co.
Bird Machine Company
Carthage Machine Co.
Chicago Bridge & Iron Co.
Dilts Machine Works
Dorr Co.
Downingtown Mfg. Co.
Green Bay Fdy. & Mch. Co.
Hardinge Co., Inc.
Moore & White Co.
D. J. Murray Mfg. Co.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

TITANIUM
American Cyanamid Co., Calco Chemical Div.
E. I. du Pont de Nemours & Co.
Titanium Pigment Co.
R. T. Vanderbilt Co.

TOOLS
Walworth Company

TRACTORS AND TRUCKS
Towmotor Corp.

TRANSMISSIONS
Link Belt Company

TRAPS
Crane Co.
Johnson Corporation
Shartle Bros. Mch. Co.
Stickle Steam Specialties Co.

TUBE MILLS
F. L. Smidth & Co.

TUBES
Babcock & Wilcox Co.
National Tube Co.

TUBING MACHINES
Dilts Machine Works

TUBING, MECHANICAL
National Tube Co.

TUBS
Rodney Hunt Machine Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

TURBINES
Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.
General Electric Company
Hunt, Rodney, Mach. Co.

UNWINDERS
Dilts Machine Works (Kohler Systems)
John Waldron Corp.

USED EQUIPMENT
Gibbs-Brower Co.
Thomas W. Hall Co.
J. J. Ross Company
Ross Paper Machy. Corp.
Shartle Brothers Machine Co.

VALVES
Crane Company
Dilts Machine Works
E. D. Jones & Sons Co.
Magnus Metal Corp.
D. J. Murray Mfg. Co.
William Powell Co.
Record Fdy. & Mch. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Stickle Steam Specialties Co.
Taylor Instrument Companies
Trimbey Mach. Wks.
Valley Iron Works Co.
Walworth Company

VORTRAPS
Nichols Engrg. & Research Corp.

WASHERS
Bird Machine Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Green Bay Fdy. & Mch. Co.
E. D. Jones & Sons Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Rodney Hunt Machine Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

WASTE TREATING, EQUIPMENT
The Dorr Company
Hungerford & Terry, Inc.

WATER CONDITIONING
Calgon, Inc.
The Dorr Company
General Dyestuff Corp.
Hungerford & Terry, Inc.
National Aluminate Corp.
The Permutit Company
The Sandy Hill Iron & Brass Works

WATER DISPERSIONS
American Cyanamid Company Industrial Chemicals Division
Rohm & Haas Co., Resinous Products Div.

WATER FILTERS
Green Bay Fdy & Mch. Wks.
The Permutit Company

WATER FINISH EQUIPMENT
Dilts Machine Works

WATER PENETRATION TESTER
Thwing-Albert Instrument Co.

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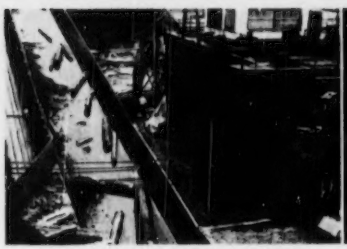
START OF THE SYSTEM is this 36"-wide Goodyear Style B Conveyor, operating on 900' centers, hauling logs from stock piles toward the mill.

TRAVELING GANTRY loads 4' log sections onto conveyor at various points along its length.

LOG CONVEYOR CLIMBS 30' from ground level, lifting logs toward transfer point where second conveyor, direct from river, also feeds belt loading into mill.



THREE GOODYEAR STYLE B CONVEYORS move logs from stock pile conveyors to chippers. Belts are 108', 62' and 75' on centers, 72" wide x 7-ply 42-oz. reinforced duck.

CHIPS RIDE THE "BELT LINE" from chippers to storage, then in constant flow as needed from surge pile to digesters. Belts are 48" x 4 ply synthetic construction.

SECRET OF THE STEADY FLOW OF CHIPS is this battery of surge bins, fed by chip-handling belt running through "bridge" at left. Belt not shown feeds digesters.

Belts beat down log handling costs

FROM stock pile to chipper, storage bin to digester, all the wood going into one prominent paper mill rides on conveyor belts installed according to the recommendations of the G. T. M. —Goodyear Technical Man. Conveyorization of these operations has smoothed out delivery of chips, lowered over-all-cost of all handling of materials.

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